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# Self-recovery from disasters

## An interdisciplinary perspective

John Twigg, Emma Lovell, Holly Schofield, Luisa Miranda Morel, Bill Flinn, Susanne Sargeant, Andrew Finlayson, Tom Dijkstra, Victoria Stephenson, Alejandra Albuerne, Tiziana Rossetto and Dina D'Ayala

Key messages

- **Self-recovery:** most disaster-affected families rebuild their homes relying on their own and local resources, with little or no external assistance.
- **Context:** the governmental, economic, environmental and socio-cultural contexts in which self-recovery takes place greatly affect how it progresses. Availability and application of reconstruction grants are influenced by government conditions. Recovery often takes place in multi-hazard environments. Socioeconomic differences and levels of community organisation have an effect on access to, and use of, resources.
- **Drivers and barriers:** many different influences contribute to the overall progression of self-recovery or to progress being held back. Important factors include households' changing needs and priorities, livelihood pressures, psycho-social reactions to disaster, and the level of technical skills and knowledge available.
- **Build back safer:** the process of reconstruction in self-recovery is multi-faceted, involving complex decision-making and priority setting by affected individuals and households. It is also influenced by external resources, support and regulations.
- **Interdisciplinarity:** effective support for self-recovery requires humanitarian and other actors to take an interdisciplinary approach to both design and implementation of interventions.

**Overseas Development Institute**
203 Blackfriars Road
London SE1 8NJ

Tel. +44 (0) 20 7922 0300
Fax. +44 (0) 20 7922 0399
E-mail: info@odi.org.uk

www.odi.org
www.odi.org/facebook
www.odi.org/twitter

# About this project

‘Promoting safer building – Using science, technology, communication and humanitarian practice to support family and community self-recovery’ (November 2016–July 2017). Partners include the Overseas Development Institute (ODI), CARE International UK, University College London (UCL) and the British Geological Survey (BGS). The project is funded by the UK Government’s Global Challenges Research Fund through the UK Natural Environment Research Council, Ref: NE/P016200/1. We would also like to thank the CARE UK Investment Fund for supporting this project.

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# Acronyms

| | |
|---|---|
| **BBS** | Building back safer |
| **BGS** | British Geological Survey |
| **CGI** | Corrugated galvanised iron |
| **DRR** | Disaster risk reduction |
| **ESA** | Emergency Shelter Assistance |
| **GPS** | Global Positioning System |
| **HRRP** | Housing Reconstruction and Recovery Platform |
| **INGO** | International non-governmental organisation |
| **IRDR** | Integrated Research on Disaster Risk |
| **MGB** | Mines and Geosciences Bureau |
| **MRT** | Mandatory Rules of Thumb |
| **NBC** | Nepalese Building Code |
| **NGO** | Non-governmental organisation |
| **NOAH** | Nationwide Operational Assessment of Hazards |
| **NPR** | Nepalese rupees |
| **NRA** | National Reconstruction Authority |
| **ODI** | Overseas Development Institute |
| **PDNA** | Post-disaster needs assessment |
| **PLA** | Participatory learning and action |
| **PO** | Partner organisation |
| **RC** | Reinforced concrete |
| **SOTER** | Soil and Terrain Database for Nepal |
| **UCL** | University College London |
| **UNOCHA** | United Nations Office for the Coordination of Humanitarian Affairs |
| **VDC** | Village Development Committee |

# Executive summary

Humanitarian agencies are increasingly looking to integrate support for self-recovery into post-disaster interventions. Despite a willingness on the part of implementing agencies and partners to place the agency and choice of those affected by a disaster at the core of their interventions, the term 'self-recovery' has yet to be fully defined and elaborated. It is generally used in the humanitarian shelter sector to mean the process whereby disaster-affected households repair, build or rebuild their shelters themselves or through local builders. It has been estimated that international aid agencies' support for housing recovery rarely reaches more than 30% of those affected within the first year after a disaster (Parrack et al., 2014). This poses challenges to aid agencies, one being how to promote the building back of shelters that are safer.

Post-disaster recovery is seen as a critical process in reducing risk and building resilience (Ievers and Bhatia, 2011). Moreover, promoting and ensuring safer reconstruction has long been a key consideration for humanitarian actors aiming to build resilience to natural hazard-related disasters, including those influenced by climate change. These themes are central to the Sendai Framework for Disaster Risk Reduction (2015–2030), as one of its four pillars is to 'build back better' in recovery, rehabilitation and reconstruction (UNISDR, 2015). The term 'build back better', which came out of the response to the 2004 Indian Ocean tsunami, has been regularly invoked in policy as well as operationally in subsequent disasters (Fan, 2013), acknowledging that older notions of recovery as a return to pre-disaster normality merely recreate the conditions of vulnerability that lead to disasters. 'Building back better' also aligns with contemporary understanding of resilience as a positive, transformational capacity or process (Manyena et al., 2011).

This working paper presents the findings from a pilot research project that investigated how disaster-affected households in low- and middle-income countries rebuild their homes in situations where little or no support is available from humanitarian agencies. The project was an interdisciplinary collaboration involving social scientists, geoscientists, structural engineers and humanitarian practitioners. It was led by the Overseas Development Institute (ODI), working in partnership with CARE International UK, the British Geological Survey (BGS) and University College London (UCL). This pilot project stepped beyond the limitations of agency post-disaster response evaluations and undertook research to understand self-recovery processes, and how supporting self-recovery can contribute to promoting safer shelter reconstruction. The work was broad in scope. It investigated households' self-recovery trajectories and the wide range of technical, environmental, institutional and socioeconomic factors influencing them over time. It also considered how safer construction practices can be more effectively integrated into humanitarian shelter responses.

The findings of the working paper draw on a combination of desk research, expert workshops and field studies, including field trips to Nepal (to visit communities affected by the 2015 Gorkha earthquake) and the Philippines (to communities affected by Typhoon Haima, known locally as Lawin, in 2016, and Typhoon Haiyan, known locally as Yolanda, in 2013). Findings were shared and debated through in-country workshops, international conferences, and academic and practitioner networks. The research was exploratory, seen as a foundation for longer-term research and action to support self-recovery processes.

## Key findings

- **Context:** the governmental, economic, environmental and socio-cultural contexts in which self-recovery takes place greatly affect how it progresses. Availability and application of reconstruction grants are influenced by government conditions. Recovery often takes place in multi-hazard environments. Socioeconomic differences and levels of community organisation have an effect on access to, and use of, resources.

- **Drivers and barriers to self-recovery:** many different influences contribute to the overall progression of self-recovery or to progress being held back. Important factors include households' changing needs and priorities, livelihood pressures, psycho-social reactions to disaster, and the level of technical skills and knowledge available.

- **Build back safer:** the process of reconstruction in self-recovery is multi-faceted, involving complex decision-making and priority setting by affected individuals and households. It is also influenced by external resources, support and regulations.

- **Interdisciplinarity:** effective support for self-recovery requires humanitarian and other actors to take an interdisciplinary approach to both design and implementation of interventions.

Photo: Bill Flinn, 2017. Mixed informal community focus group in Deurali in the Chainpur VDC, Nepal

## Context

The role of government in post-disaster response greatly affects the way in which people self-recover. In Nepal, Government grant conditionality required specific reconstruction work to be undertaken in order for grant tranches to be awarded. However, a shortfall between the expected cost of work and allocated tranches hindered progress towards reconstruction and self-recovery. Conversely, in the Philippines, decentralised grant distribution systems and less strict conditionality meant that financial support was used more flexibly by recipients, ultimately promoting a relatively rapid and successful self-recovery process.

The environmental context has a strong influence on recovery trajectories and strategies. In Nepal and the Philippines, the communities that were visited experienced a range of different hazards. Access to roads, services, transportation of goods and communications technology also varied considerably. Moreover, the frequency of hazard events influenced the perception of risk felt by the communities, which in turn influenced their reaction to the disaster and ultimately their recovery. Communities demonstrated a degree of resilience in dealing with frequent hazard events (such as monsoon landslides or the typhoon season). Less frequent, high-impact events (the Gorkha earthquake and Typhoon Haiyan) resulted in a severe loss of resilience at the household level, and a reduced capacity for individuals to respond to other shocks and stresses post-disaster.

The social, economic and cultural context within which recovery occurred influenced inequalities, differential access to information and services, power relations and belief systems, which in turn affected households' ability to self-recover. Community organisation had a strong influence on how individuals viewed and acted in terms of their own personal recovery process. The Filipino tradition of *bayanihan*, or community cohesion and mutual support, was said to have greatly facilitated community recovery. In Nepal, community organisation was also common, although seemingly less formalised.

## Drivers and barriers to self-recovery

Families and communities recovering from disasters set priorities and take decisions based on the knowledge they have, their needs and their means. They consistently express a desire to be in control of their own recovery process. The exercise of choice, ownership and empowerment is central to the concept of supporting self-recovery, and a challenge for assisting agencies is how to facilitate this greater freedom of choice. The degree of access to knowledge and technical assistance affects the extent and nature of recovery. Priorities can shift as time

goes by, influencing families' recovery pathways: shelter may be a priority initially, livelihoods may soon replace it. A consistent theme was communities' view of recovery as a process of preparedness for the next event, and factors such as trauma were a barrier to this process.

### Build back safer

In both countries, the Global Shelter Cluster, in coordination with the government, promoted a series of build back safer (BBS) messages for incorporating appropriate improved construction techniques into recovery. Uptake of BBS varied widely, depending on the level of compliance with building codes required by governments, the amount of financial support available, the extent of access to materials and technical assistance, and local perceptions and priorities regarding safety.

### Interdisciplinarity

This interdisciplinary project involved engineers, geoscientists, social scientists and humanitarian practitioners. This reflects the multi-faceted nature of humanitarian response and the need for cross-sector programming to support and promote successful self-recovery. The findings of the study reinforce the need for aid actors to develop interdisciplinary strategies for intervening in a post-disaster context.

## Next steps

This pilot study has extended our understanding of self-recovery by identifying some of its features and the factors affecting it, but the concept of self-recovery itself needs further refinement and clarification. 'Self-recovery' cannot be seen in isolation from other aspects of household and community recovery because, as this project's research shows, these are integrally linked. Moreover, the term is open to a variety of interpretations, depending on different knowledge, experiences and perspectives. There is a clear requirement for future work that builds on these initial findings to develop deeper understanding of the factors involved in self-recovery and means of supporting it.

In pursuit of this goal, the project team has initiated two next steps:

1. A **16-month research project** has commenced, funded by the British Academy, to increase understanding of self-recovery in urban contexts in the same two countries, Nepal and the Philippines.[1]

2. A **Global Shelter Cluster working group** has been set up, led by CARE International, to pursue the promotion of safer reconstruction and self-recovery. Key objectives include exploring how humanitarian actors are promoting this, and how it can be improved in the future.

Self-recovery is acknowledged as being highly significant in post-disaster recovery processes, but at the same time it is not well understood, either by humanitarian or government actors and donors. An approach that supports families on their own self-recovery pathway can have an impact on the majority that self-recover, increasing the safety of their homes and improving their resilience to environmental shocks and stresses.

This working paper presents one of the first studies to describe and understand the process of self-recovery, through original, independent research. It highlights that self-recovery is an inevitable and complex process. Understanding it better and developing humanitarian interventions that support families and communities on their pathways to recovery has the potential to dramatically influence humanitarian practice and contribute to long-term resilience.

1 'Safer self-recovery: promoting resilient urban reconstruction after disasters' (September 2017–January 2019). Funded by the Global Challenges Research Fund through the British Academy (Ref. CI170172).

# 1. Introduction

## 1.1. Background to the project

Shelter self-recovery is complex and multi-faceted, but is not well understood. Humanitarian organisations, in spite of their increasing interest in supporting self-recovery in response and reconstruction, still know little about the process from the perspective of disaster-affected people. This working paper presents the findings from a pilot research project that investigated how disaster-affected households in low- and middle-income countries rebuild their homes in situations where little or no support is available from humanitarian agencies.[2] The project aimed to improve knowledge and understanding of shelter self-recovery, and the drivers and barriers affecting its progress and outcomes, in order to inform future decision-making about how humanitarian actors can provide more effective support and encourage the adoption of construction techniques that make buildings safer.

The project was an interdisciplinary collaboration involving social scientists, earth scientists, structural engineers and humanitarian practitioners. It was led by the Overseas Development Institute (ODI), working in partnership with CARE International UK, the British Geological Survey (BGS) and University College London (UCL). Through desk research, expert workshops and, particularly, field studies in the Philippines and Nepal, it investigated households' self-recovery trajectories and the wide range of technical, environmental, institutional and socioeconomic factors influencing them over time, as well as how safer construction practices can be more effectively integrated into humanitarian shelter responses. Findings were shared and debated through in-country workshops, international conferences, and academic and practitioner networks. The research was exploratory, seen as a foundation for longer-term research and action to support self-recovery processes. A second phase is looking at self-recovery and safer reconstruction in urban settings.[3]

This working paper reflects on experiences of interdisciplinary research in the course of the project, and what these revealed about how households and communities self-recover and the decisions they make. It also considers the implications of these findings for recovery policy and practice. The project's underlying principle was that shelter interventions supporting self-recovery should put disaster-affected people's agency and choice at centre stage. Control by those affected is key in any self-recovery process. The role of implementing partners is to support this process.

## 1.2. Self-recovery after disasters

Post-disaster recovery is seen as a critical process in reducing risk and building resilience (Ievers and Bhatia, 2011). One of the four pillars of the Sendai Framework for Disaster Risk Reduction (2015–2030) is to 'build back better' in recovery, rehabilitation and reconstruction (UNISDR, 2015). The term 'build back better', which originated after the 2004 Indian Ocean tsunami, has been regularly invoked in policy as well as operationally in subsequent disasters (Fan, 2013), acknowledging that older notions of recovery as a return to pre-disaster normality merely recreate the conditions of vulnerability that lead to disasters. 'Building back better' also aligns with contemporary understanding of resilience as a positive, transformational capacity or process (Manyena et al., 2011; Pelling and Manuel-Navarrete, 2011).

Housing reconstruction plays a key role in wider recovery from sudden-onset events. Building collapse is a major cause of injury, trauma and death in disasters triggered by natural hazards. Between 1994 and 2013, 66 million homes worldwide were damaged or destroyed by floods, 25 million by earthquakes and 24 million by storms (CRED, 2015). Repair and reconstruction of housing and community infrastructure are therefore key elements in humanitarian interventions. However, humanitarian agencies face considerable operational challenges in providing or supporting shelter after major disasters (Ashdown et al., 2011), particularly where there has been widespread destruction. Debates about appropriate approaches to post-disaster shelter – particularly in terms of safer reconstruction, responding to disaster-affected people's priorities and ensuring community participation – date back to the 1970s, but they remain unresolved, with continuing criticisms of inappropriate reconstruction approaches (Davis and Alexander, 2016; Schilderman and Parker (eds), 2014).

2 'Promoting safer building – Using science, technology, communication and humanitarian practice to support family and community self-recovery' (November 2016–July 2017). Funded by the UK Government's Global Challenges Research Fund through the Natural Environment Research Council (Ref. NE/P016200/1) with additional support from the CARE International UK Investment Fund.

3 'Safer self-recovery: promoting resilient urban reconstruction after disasters' (September 2017–January 2019). Funded by the Global Challenges Research Fund through the British Academy (Ref. CI170172).

In lower-income countries, and indeed in many middle-income countries, most disaster-affected families rebuild their homes relying on their own resources, with little or no external assistance. This is commonly referred to as 'self-recovery'. Although reliable data are hard to obtain, it has been estimated that international aid agencies' support for housing recovery rarely reaches more than 30% of those affected within the first year of a disaster, and often reaches a much smaller proportion. Moreover, much of that support is in the form of temporary housing (Parrack et al., 2014). Aid agencies and researchers have therefore begun to give greater attention to the hitherto invisible majority who self-recover. Moving away from a product-based response (e.g. providing a tent, a temporary structure) and finding ways of facilitating shelter self-recovery (e.g. through material, financial and technical assistance and training) may achieve greater and more cost-effective outreach, and encourage self-reconstruction actions that incorporate safer building techniques.

Although the literature on different forms of post-disaster reconstruction is extensive (Davis and Alexander, 2016; Schilderman and Parker (eds), 2014) and there has long been interest in community-led shelter reconstruction projects (Davidson et al., 2007; Schilderman, 2004), research specifically into self-recovery is new and remains limited. This is not surprising, since much of the evidence and research that informs reconstruction policy and practice is found in evaluations, reports and data collection relating to humanitarian agencies' interventions and their outcomes. Not only do their shelter interventions reach a relatively small proportion of those affected, but in many cases their assistance does not arrive until some time after the disaster (Kelman et al., 2011). Disaster-affected households cannot afford to wait this long. Rebuilding their home is an immediate priority. Understanding self-recovery from these households' perspectives, and reconciling this with humanitarian objectives and standards, is challenging (Miranda Morel, 2017; Schofield and Miranda Morel, 2017).

Agencies' assessments and evaluations struggle to capture the many and varied consequences of disasters, which include deaths, injuries, destruction of housing, loss of employment and livelihoods, and disruptions to markets, social networks and place attachments. Many assessments are sectoral, dealing separately with aspects such as shelter, health and livelihoods, even though the significance of the links between these has long been recognised in research literature (Bolin and Stanford, 1991). International humanitarian practice is heavily influenced by the Global Cluster Approach, a structure designed to improve operational coordination by grouping humanitarian organisations into thematic 'clusters' focusing on the main sectors of intervention (of which shelter is one),[4] but this may inadvertently encourage working in separate sectoral 'silos'.

There is still no consistent or widely accepted definition of 'self-recovery' (see Box 1: What is self-recovery?).

### Box 1: What is self-recovery?

The concept of 'self-recovery' has yet to be fully defined and elaborated. It is generally used in the humanitarian shelter sector to mean the process whereby disaster-affected households repair, build or rebuild their shelter themselves or through local builders.

Shelter self-recovery has been defined as when populations affected by disasters rebuild or repair damaged or destroyed homes using their own assets through self-building or hiring the local informal building sector. These assets can be savings, materials (salvaged, donated or owned), social and community support mechanisms, local skills and labour, and remittances from family members living in other places (Parrack et al., 2014).

Humanitarian interventions supporting shelter self-recovery are those 'providing one or a combination of material, financial and technical assistance, during the relief and/or recovery phase, to enable affected households to repair, build or rebuild their own shelters themselves or through using the local building industry' (Maynard et al., 2017: 6).

The intended impact of interventions to support self-recovery is that people experience 'longer term and/or wider scale physical, social, economic and environmental recovery and resilience' (ibid.: 8), both by building stronger and safer houses and by acquiring and sharing learning about safer building techniques. However, the impact of self-recovery assistance on people's knowledge about safer building techniques has been described as 'unclear' (ibid.: 62).

The relationship between 'self-recovery' and similar terms and approaches in post-disaster shelter (owner-driven, community-based, informal, user-built) is also unclear. Just as community involvement in post-disaster housing projects comprises a continuum of possibilities for participation, ranging from providing labour to playing a role in decision-making (Davidson et al., 2007), so self-recovery can also encompass different degrees and types of support from family and community members, local organisations and formal organisations of different kinds.

The narrow application of the term 'self-recovery' to shelter can also have the undesirable result of separating physical reconstruction from other connected and complementary aspects (e.g. economic, social and psychosocial) of household and community recovery (Flinn and Echegaray, 2016; Newby et al., n.d.).

4 Other clusters are: food security; health; logistics; nutrition; protection; water, sanitation and hygiene; camp coordination and camp management; early recovery; education; emergency telecommunications. Cluster coordination leadership is carried out by UNOCHA.

Photo: Luisa Miranda Morel, 2017. 'Working on other people's houses is good so they will come and help me build mine' – rebuilding in Nepal

The current framing of the concept is found within the shelter and construction sector. It seems to have been first adopted by humanitarian shelter practitioners after Cyclone Sidr in Bangladesh in 2007, but has been much more widely used in a range of contexts since Typhoon Haiyan in the Philippines in 2013 (Maynard et al., 2017). The first academic work to use 'self-recovery' with regard to humanitarian shelter and settlements (Parrack et al., 2014) sought to draw attention to the subject by highlighting the scale and significance of self-recovery and identifying some of its features.

Shelter plays a central role in self-recovery. Physical reconstruction can be seen as a 'crude surrogate' for other aspects of economic and societal recovery (Platt et al., 2016). From the perspective of disaster-affected individuals and communities, however, recovery is a wide-ranging and long-term process that does not end with the construction of a house, no matter how structurally safe it might be. Pathways to recovery integrate a number of different elements, including basic needs, shelter, livelihoods and health; and household needs and priorities change over time (Schofield and Miranda Morel, 2017; Maynard et al., 2017).

Field experience and new research are encouraging dialogue on the subject, providing a foundation for the advancement of self-recovery in theory and practice. Humanitarian organisations have begun to put more emphasis on supporting self-recovery in their shelter programmes, notably after Typhoon Haiyan, seeing it as an important and cost-effective approach to building more resilient dwellings. Case study and evaluation reports on such interventions provide reflections on lessons learnt and ways forward from a shelter practice perspective (Flinn and Echegaray, 2016; Maynard and Barritt, 2015; Newby et al., n.d.). Academic research is highlighting existing gaps and areas for future research, as well as suggesting how this can inform future interventions. A recent evidence synthesis for the Humanitarian Evidence Programme has looked at the existing, very varied, literature on the implementation and effects of humanitarian interventions supporting shelter self-recovery (Maynard et al., 2017). This found increased dignity and self-reliance among households living in their own homes and taking ownership of the reconstruction process, and an increased sense of safety and security resulting from a better understanding of construction materials and quality and the incorporation of safer building techniques. However, there was less evidence to suggest positive impacts upon other aspects of household life (e.g. incomes, livelihoods, physical and mental health).

# 2. Methods and methodology

## 2.1. Disasters and interdisciplinary research

Disasters are complex societal problems, involving human, environmental and technological systems (Wisner et al., 2004). No single research discipline can address these inter-related issues. Bringing different disciplines together to study disasters allows each individual discipline to benefit from understanding the perspective of others: their single disciplinary research is enriched by the findings of other disciplines (Petak et al., 2008).

Different methods have combined in disaster research, notably in vulnerability analysis (Birkmann, 2006); and international scientific and disaster agencies are currently sponsoring the 10-year global Integrated Research on Disaster Risk (IRDR) programme to develop and improve knowledge and methods (Oliver-Smith et al., 2016). There is also growing interest in how hazard and disaster science engages with policy-making for disaster risk reduction (DRR) and resilience-building (Ball and Caddick, 2016; Donovan and Oppenheimer, 2014; Duncan et al., 2014; Walker, 2010). In practice, however, different disciplines have usually worked in parallel, and a recent study of published disaster research papers suggests that comprehensively integrated approaches remain the exception (Gall et al., 2015).

Working across disciplines is increasingly encouraged by research funders and academic leadership within research institutions working on disaster problems; and many individual researchers from different disciplines have established working relationships. Nevertheless, single disciplinary research is still the norm in most academic institutions, collaborations across disciplines may not be rewarded, and lack of continuity of funding makes it difficult to develop long-term research projects and relationships across disciplines. Different disciplinary jargon and lack of common vocabularies also inhibit communication between researchers (Petak et al., 2008; Gall et al., 2015). The influential disaster sociologist E.L. Quarantelli (1924–2017), who put great emphasis on methodological rigour, supported interdisciplinary research as an ideal but expressed concern that it lacked 'a common operative research language' (Quarantelli, 1982: 3).

Individual disaster researchers face the intellectual challenge of moving outside their 'comfort zone' into unfamiliar theoretical and empirical contexts. They have to learn new methods and terminology. They may have to justify or question their own knowledge and attitudes in research terms, and run the risk of acquiring breadth of knowledge and understanding at the expense of depth. Collaborative processes are also time-consuming. Open-mindedness, self-awareness, reflection, sensitivity and negotiating skills are all required to make them successful (Trussell et al., 2017; Donovan et al., 2011; Oughton and Bracken, 2009).

Research into shelter self-recovery needs to consider a range of relevant aspects, principally technical/engineering (construction practices and materials), scientific (analysis of the local hazard environment), human (social, economic and institutional) and operational/practice (delivery and effectiveness of humanitarian assistance). Our research therefore drew on the approaches and insights of social science, earth science, structural engineering and humanitarian practice. Humanitarian practice was viewed as a 'discipline' in this context, helping to understand the humanitarian context (the international humanitarian 'architecture', disaster emergency response timescales, resources and constraints) and to ensure that the project's research, reflection and analysis would inform and improve future humanitarian action, particularly in breaking down barriers between technical sectors that can hinder disaster recovery processes.

## 2.2. The project's approach

The initial proposal was for a *multidisciplinary* research project, but the approach subsequently developed through the planning and fieldwork to become more *interdisciplinary*. In multidisciplinary research, investigators from different disciplines cooperate on research but work in parallel, making contributions individually and remaining within their disciplinary boundaries. In an interdisciplinary approach, the research involves interaction, integration and collaboration across disciplines, conceptually and methodologically. Interdisciplinary research, which takes a variety of forms, is increasingly used to address societal or 'real world' questions, where the interaction of different disciplines can result in new or unexpected insights (Gall et al., 2015; Toomey et al., 2015; Cassinari et al., 2011; Petak et al., 2008).

Ideas about the project's methodology and the direction of research were initially developed by the project team and through discussion with other researchers and professionals at an expert workshop in London (Promoting

Safer Building report, January 2017).[5] The review revealed a number of gaps and limitations in the existing research and evidence base:

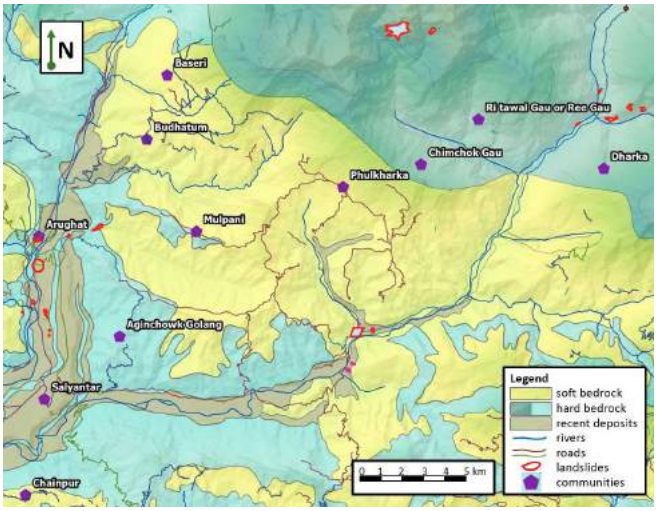
- A lack of clarity or consistency in the research and practice literature about what 'self-recovery' is, the different forms it can take and its differing meanings to different stakeholders.
- Limited knowledge of the dynamics of recovery where reconstruction takes place without formal external technical assistance.
- A research focus on obvious and noticeable features of recovery (e.g. housing reconstruction), with limited attention to smaller-scale 'everyday recovery' actions (e.g. aesthetic elements, gardening) and how these contribute to the overall process of self-recovery.
- Not enough attention paid to 'missing voices': the perspectives of individuals, households and communities, and their lived experiences of self-recovery.
- The need for further investigation into the wide range of elements influencing external assistance providers' ability to enable or promote self-recovery (e.g. government policies, land regulation, access to resources, donor requirements, time pressures).
- Limited understanding of the different time scales of self-recovery at individual, household and community levels, and the wide range of factors influencing this.
- Lack of consideration of household and community gender dynamics and their relationship to self-recovery.
- Interest in the choices people make post-disaster, but little in-depth discussion of who makes them within households and communities.

Group discussions debated a number of theoretical and practical issues including: the strengths, weaknesses, opportunities and challenges associated with carrying out interdisciplinary research; different perceptions and understandings of self-recovery; drivers and barriers to self-recovery; and the implications of new insights into how aid, technical and knowledge institutions should intervene. There was also discussion of the need to define and quantify terms such as 'safe' and 'safer' in relation both to existing construction and to reconstruction techniques and technology. These discussions raised further issues, including how to measure the success of 'self-recovery'; the role that people have in decision-making; understanding of shelter as a process; the wide variety of forms that self-recovery can take; and new ways of thinking about 'humanitarian participation' in people's self-recovery processes (instead of the traditional 'beneficiary participation' in humanitarian agendas). A further discussion session generated a large number of ideas about appropriate interdisciplinary research methods for this project; potential research questions; expected outputs and outcomes; and ethical issues in post-disaster research.

From the workshop ideas and discussions, the research team identified an overarching research question: how do individual households and communities recover from disasters?

Several lines of enquiry were identified to help answer this question and guide the research team throughout the subsequent field research and analysis: what constitutes 'recovery' for individuals and communities affected by disasters; the strategies adopted by households and communities to self-recover from disasters; how various actors shape the self-recovery process; the specific interventions or conditions that may support (or hinder) self-recovery; factors influencing the provision and uptake of different forms of technical advice for safer construction; and the effects of all these factors on making houses safer. These were broad questions open to exploration in various ways by the different disciplines engaged in the project. As the discussion in Section 3 shows, other significant themes appeared during the course of the research.

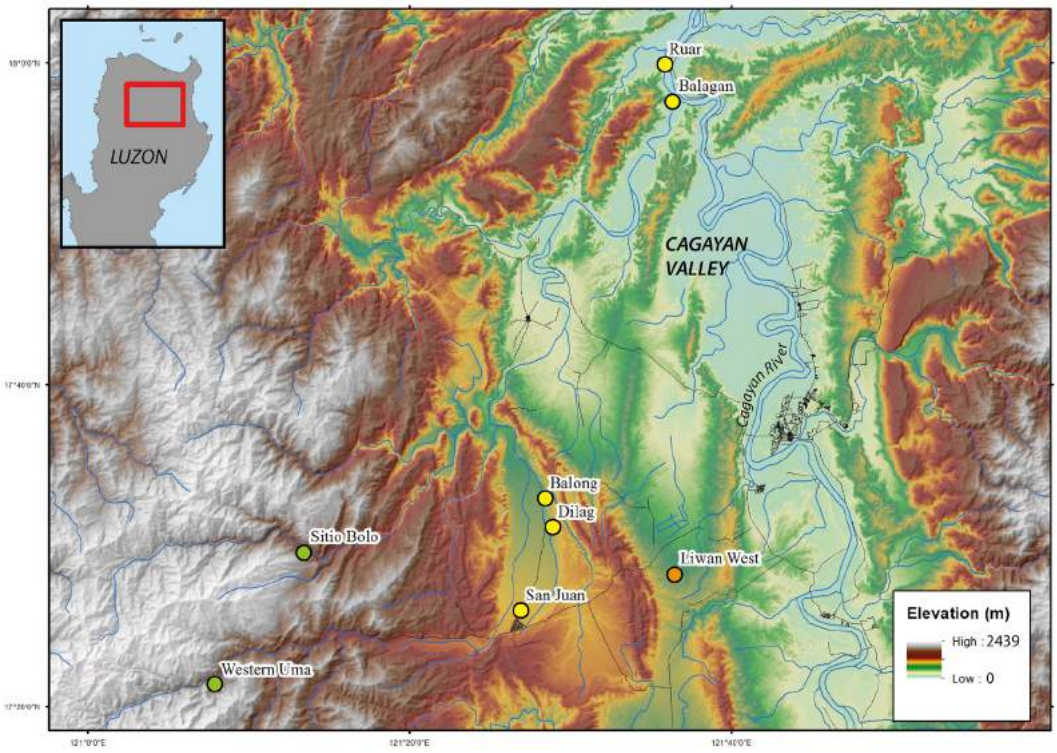
**Figure 1: Locations of the field site visits in Dhading District, Nepal**




*Source: BGS, 2017. Note: Map showing the locations of the visited communities. The basic geological information is from the Soil and Terrain Database for Nepal (SOTER; Dijkshoorn and Huting, 2009). The background is a hill-shaded, 30 m digital elevation model for Nepal (Shuttle Radar Topography Mission (SRTM30)). Quartzite, gneiss and migmatite are hard rocks whereas slate and phyllite are softer.*

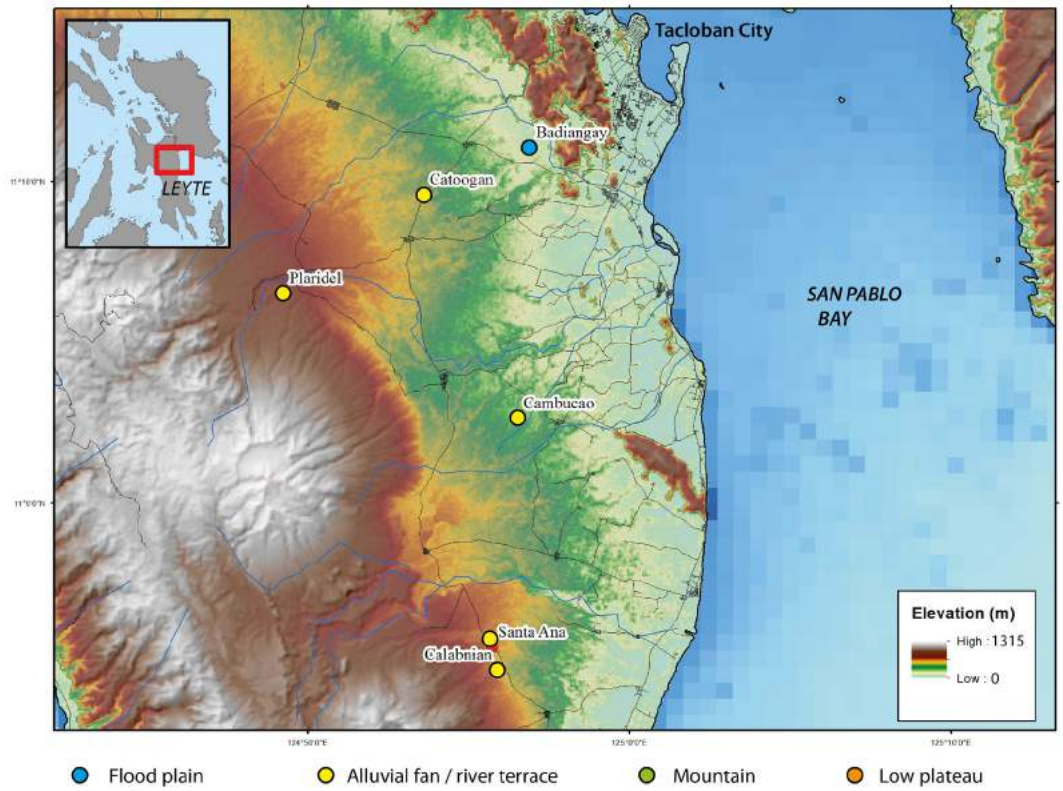
5 See list of project documents and reports at the end of this working paper

**Figure 2: Locations of the field site visits in Leyte, the Philippines**




*Source: BGS, 2017. Note: Location of the Luzon communities that were visited where the research team included geoscience representation. Coloured circles represent geomorphological typologies for each community. The background shown is a hill-shaded, 90 metre digital elevation model (SRTM 90).*

**Figure 3: Locations of the field site visits in Luzon, the Philippines**




*Source: BGS, 2017. Note: Location of the Leyte communities that were visited where the research team included geoscience representation. Coloured circles represent geomorphological typologies for each community. The background shown is a hill-shaded, 90 metre digital elevation model (SRTM 90).*

Two field studies were carried out between March and May 2017 in disaster-affected locations in the Philippines and Nepal (see Figures 1–3). In the Philippines, researchers visited 14 *barangays*[6] in rural and peri-urban settings in Leyte and Luzon that had been affected by typhoons Haiyan (2013) and Haima (2016). All the *barangays* were home to beneficiaries of CARE shelter or livelihoods assistance, provided through local implementing partners, although not all community members had been selected as beneficiaries. Haiyan (known locally as Yolanda) affected over 14 million people; over four million were displaced and over 6,000 killed; and more than one million houses were damaged or destroyed (UNOCHA, 2014). The disaster generated a major international humanitarian response, requiring long-term recovery assistance programmes (Marshall, 2014). By contrast Typhoon Haima (known locally as Lawin) was less severe, with only a few deaths, but 186,000 houses were damaged or destroyed (ibid., 2016a and 2016b). Impacts on livelihoods, materials and resources were less severe and recovery was much quicker. Hence, few international non-governmental organisations (NGOs) were present and the funding was limited. The Government of the Philippines led the humanitarian response and formally declined offers of international assistance.

In Nepal, researchers visited 11 communities in Dhading District, which had suffered severe damage in the 25 April 2015 Gorkha earthquake (magnitude 7.8) and many aftershocks, including a major event on 12 May 2015 (magnitude 7.3). There were also many earthquake-triggered landslides. The 25 April earthquake destroyed more than 600,000 houses and left another 285,000 partially damaged. More than eight million people were affected, with 117,000 displaced, over 8,000 fatalities and more than 22,000 injured (EMI, 2015). The self-recovery experiences of disaster-affected communities in Nepal contrasted with those in the Philippines: the aftershocks and monsoon rains in the weeks and months following the event challenged self-recovery efforts.

The sites in both countries displayed a range of variations in terms of distance to towns, accessibility, geographical setting (flood plains, river terraces and mountains), geology, ground permeability, climate, hazards, cultural context, building typology and the nature of government engagement. In the Philippines, communities were visited in flood plain, alluvial fan and river terrace, and mountainside landscapes. Housing consisted mainly of timber structures built to a range of designs and with many different forms of cladding. The communities visited in Nepal were located in a range of landscapes (geomorphologies) and geological settings ranging from hard rock sites in regions of fairly extreme topography and softer rock sites in more undulating landscapes, with many slopes terraced for agriculture in both settings. Here, the housing was mainly multi-storey unreinforced masonry.

Each research team comprised specialists in structural engineering (particularly traditional or vernacular building), geohazards and the physical environment in which recovery took place, social sciences (anthropology and sociology, particularly relating to resilience and housing) and humanitarian practice.[7] The team was supported by local interpreters recruited by the respective CARE country offices.

Initial desk studies of the case study areas helped the teams to understand the physical environment in which recovery was taking place. In the Philippines, these consisted of searches of peer-reviewed literature and examination of other publicly available information relevant to the case study areas (geological, topographical and hazard maps; aerial imagery; elevation datasets; information on local scientific actors).[8] In Nepal, publicly available seismic hazard and risk maps and assessments, satellite imagery, elevation datasets, and peer-reviewed research on the 2015 Gorkha earthquake were consulted.[9]

In each country, a broadly similar methodology was applied. The teams spent no more than one day in each community, looking to capture a wide range of experiences within the limited time available. The main field research tools used were as follows:

- An initial meeting with community leaders and members introduced them to the project team, communicated the research aims and identified potential contacts within the community for focus group discussions and individual interviews.

- Transect walks (often guided by a local social mobiliser and/or other community members), observation and photography provided visual records and community perceptions of the local building stock and state of reconstruction, physical landscape and local hazards, how the community had been affected by disasters, ongoing

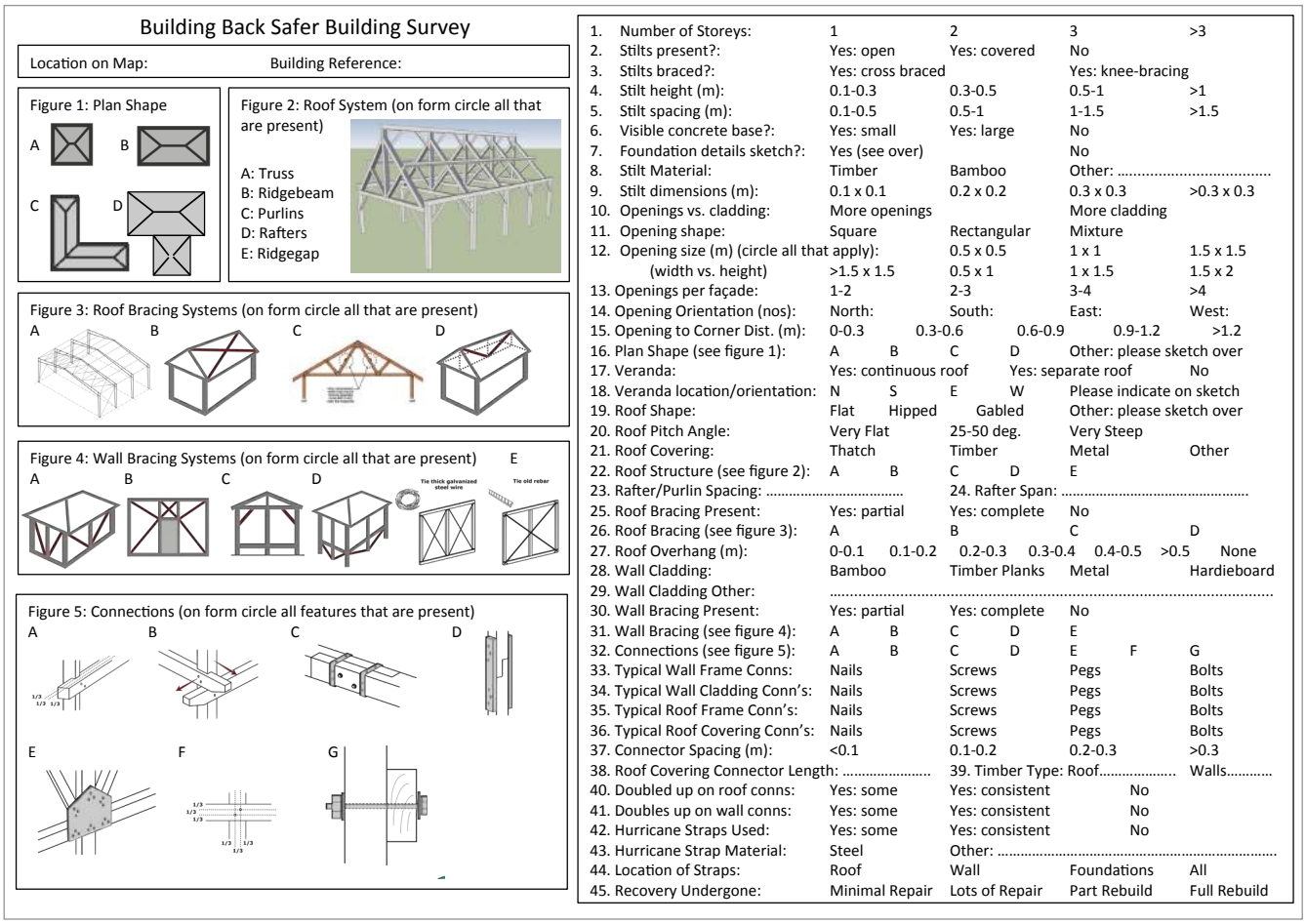
6 A *barangay* is the smallest administrative division in the Philippines; the term is used by Filipinos to mean a village, district or ward.

7 The teams for each country visit contained almost the same personnel, the only difference being the geohazards specialists deployed.

8 Publicly available 1:10,000 scale flood and landslide hazard maps of the study areas were obtained from the Mines and Geosciences Bureau (MGB) data portal. Hazard maps by the Nationwide Operational Assessment of Hazards (NOAH) were consulted online (http://noah.dost.gov.ph/#/). Topographic maps from the Philippines National Mapping and Resource Information Authority (NAMRIA), were also downloaded and printed to take into the field. Elevation datasets (SRTM 90) were consulted to provide an initial understanding of the topography at the study locations, and simple wind exposure maps were generated using these data. Aerial imagery was from Google Earth.

9 Geological information for Dhading District was obtained from the 1:1 million scale Soil and Terrain Database for Nepal (Dijkshoorn and Huting, 2009) and printed versions taken into the field. Again, elevation datasets (SRTM 30) were consulted to get an understanding of the topography at the communities we were visiting. As part of the response to the 2015 earthquake, BGS and others analysed satellite imagery to create maps of active landslides (Jordan et al., 2015) and we also made use of this information.

## Figure 4: Building survey form




*Source: Victoria Stephenson, 2017*

recovery methods, and other relevant factors such as settlement location and land use. Buildings encountered on the transect walks were recorded photographically with a Global Positioning System (GPS) tag: combined with aerial photographs, this was used to map out the building stock undergoing reconstruction (14 transect walks were undertaken in the Philippines, 13 in Nepal).

- Building surveys (see Figure 4), based on visual observation and structured interviews, recorded building typologies, structural details and condition of the buildings, techniques and materials used in reconstruction, traditional building practices and the availability of technical knowledge (local and external), and how the latter was applied (36 building survey forms were completed in the Philippines, 11 in Nepal).

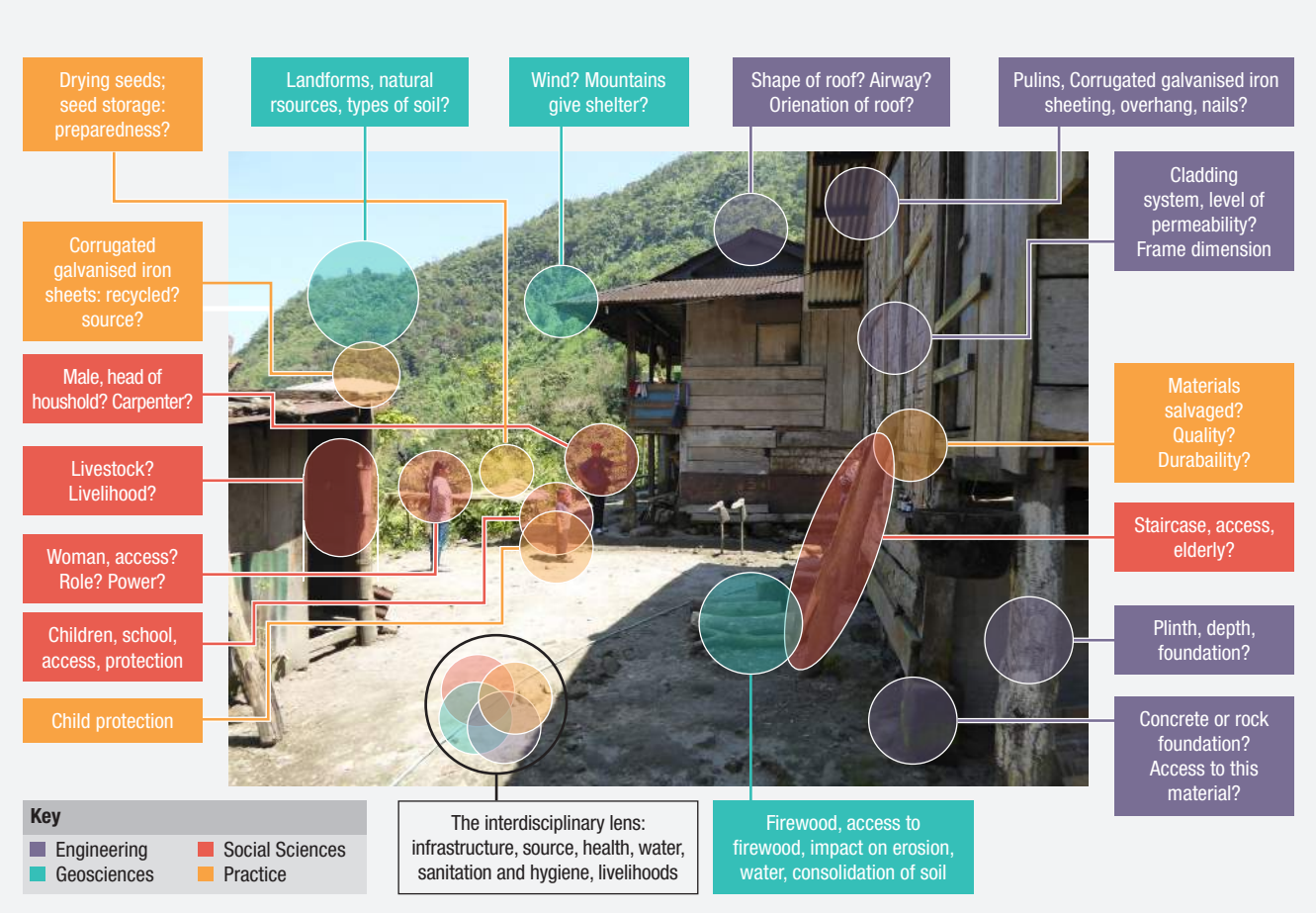
- Focus group or community discussions explored how communities had been affected by disaster, strategies used to rebuild and protect housing, factors contributing to housing vulnerability and the role of local institutions in supporting recovery (35 discussions were held in the Philippines, 20 in Nepal).

- Semi-structured interviews sought a wider and more personal perspective on recovery from a range of individuals across the community (including homeowners, builders and carpenters) on the history of the community, households' experiences of disaster, their recovery pathways, reconstruction choices, uptake of safety measures, perceptions of risk and environmental influences, and expectations of external assistance (21 semi-structured interviews were carried out in the Philippines, and also 21 in Nepal).

- Timeline mapping (together with the focus group discussions and interviews) was used to understand individual, household and community knowledge and perceptions of the local environment and hazards, and how these influenced decisions made during recovery in terms of where to rebuild houses, what techniques/designs to use, priority setting regarding other needs (e.g. repair of irrigation systems) and longer-term plans to manage interactions with the environment.

The approach emphasised tools and methods that have been widely used in participatory learning and action (PLA) research into adaptation, disaster risk management

**Figure 5: A landscape seen through the lens of different disciplines**




*Source: Luisa Miranda Morel, 2017*

and resilience, where they are said to have 'broadened the capacity for dialogue between impacted communities and relevant stakeholders' (Mercer et al., 2008: 180). So, household and community members were able to share their experiences and views of many aspects of the self-recovery process.

In addition, meetings were held with representatives of key actors at national level, including the National Coordinator of the Housing Reconstruction and Recovery Platform (HRRPa) and the General Director of the National Reconstruction Authority (NRA) in Nepal. In the Philippines, meetings were held with local and national DRR and development bodies including the Cagayan Valley Disaster Reduction Committee and the Cordillera Disaster Response and Development Service. These meetings were particularly informative about the decision-making processes followed by the national government and international humanitarian actors when devising their action plans.

At the end of each country visit, a national-level workshop was held with a range of stakeholders working on disasters, reconstruction and recovery to share and discuss the initial findings, and to debate and develop ideas about self-recovery.[10] These discussions provided an agency perspective on self-recovery contexts and pathways, and on the roles of science, indigenous knowledge and knowledge intermediaries.

## 2.3. Reflections on the interdisciplinary approach

Interdisciplinary research is challenging to design and carry out, but offers richer, more interesting and more valuable insights into self-recovery than can be achieved by applying the lens of any one discipline alone. To be successful, it is important that all disciplines are involved equally from the design through to the implementation, the analysis and the writing up of the research. Flexibility, communication, reflection and skill-sharing are fundamental for the success of interdisciplinary research. Each discipline needs to communicate with the others, understand their logic and engage with them in identifying and connecting evidence. In this way, a composite picture of the various dimensions of self-recovery is assembled (see Figure 5).

10 These are documented in two workshop reports: 'Promoting safer building and self-recovery in the Philippines' (2017); 'Promoting safer building and self-recovery in Nepal' (2017). See list of project documents and reports at the end of this working paper.

The methodology was experimental and there was a significant element of 'learning by doing'. At the end of each day in the field, the team discussed the day's findings, what had worked well methodologically and what had been more challenging. Despite having a common research topic, the differences in thematic interests and institutional representation could sometimes complicate ways of working and communicating. Carrying out research as part of a team can be especially challenging when working across disciplines: the 'team' aspect of the work can be overlooked as each member focuses on their area of specialised interest and discipline in the research process. Skills which some disciplines took for granted had to be shared across the team: for example, in recognising when to ask open or closed questions in an interview. Further internal reflection on different working styles and how team members can support each other in the field research might have been of great value. The tighter the team dynamic, the more efficiently one can discuss, debate, improvise, function and innovate in challenging research environments.

The research approach emphasised the use of qualitative social science methods (transect walks, focus groups, semi-structured interviews, timeline mapping), complemented by some methods more specific to individual academic disciplines (assessing the physical landscape, building surveys). The mix of methods helped to build up a composite recovery picture: for example, regarding the uptake of BBS messages (below, section 3.3), the team visually investigated the alterations that people made to their homes according to the messages, and it explored the reasoning behind the actions (why certain messages were chosen over others, why some messages were not followed, and why messages were adapted or different materials used). Understanding a community's resilience and recovery from a social science perspective was enhanced by taking the environmental and geophysical aspects of communities' locations into account.

The team observed structures largely rebuilt by the homeowners, with varying external assistance from international non-governmental organisations (INGOs), local NGOs or government officials. These represented the product of different degrees of self-recovery and assisted recovery, which created a complex set of variables to consider when attempting to describe the impact of different forms of recovery intervention on the buildings' safety.

One of the main challenges was how to find a balance when choosing what types of information to collect, within the time and resource constraints in the field. The amount of time that the team had to carry out the research on a given day was limited and depended on a range of practical factors, such as the physical accessibility of each community and locating spaces to carry out research activities. The team had to decide which methods were most effective in capturing a variety of information in a short space of time, and to agree how to meet the needs of each discipline without compromising those of others. Decisions often had to be made on the spot once the team was in the community; improvisation and adaptation were required.

There were variations across the disciplines in the type and amount of information required, as well as the level of detail needed to validate it, with different timeframes for data processing and analysis. Bringing the different forms of information together and triangulating findings also required time.

Concerns surrounding researcher positionality[11] lie at the heart of all research involving human participants. The positionality of a foreign researcher, female or male, a social scientist, earth scientist, engineer or representative of an organisation that has in the past been known to give material or cash grants, is bound to influence the perceptions of research participants and the information that they are willing to share (for this research, in most instances, particularly in the Philippines, the communities visited had links of some kind to CARE programmes). Handling these positionalities and remaining objective was crucial to engagement with communities and the effectiveness of the research process, although the interdisciplinary methodology helped to balance different subjectivities.

## 2.4. Analysis and validation of results

The process of discussing and analysing the field data, identifying the different dimensions of self-recovery and selecting the key themes and findings from the research, was iterative. It began with the end-of-day discussions within the teams in the field and continued with further team discussions on their return to the United Kingdom; having largely the same team on each field trip assisted this process. External validation was provided by a workshop in each country, after the fieldwork, where the initial findings were presented and discussed by experts from local and international aid agencies and research institutions.[12] Additional feedback came from the project's advisory group, which held regular meetings, and from an international conference of researchers and practitioners to share the research findings in London in July 2017 (see list of project documents and reports at the end of this working paper).

11 Positionality refers to a researcher's place in a research setting, based on their world views, assumptions and the position they adopt in relation to a research topic or task. A researcher's positionality is also influenced by identities: their own and those of research participants: these include beliefs and values, race and ethnicity, social class, gender, disability, religion and political affiliation. Positionality frames the social and professional relationships that are formed in the field research setting. It sets the tone of the research and affects the course it takes as well as the outcomes that result from it (Savin-Baden and Howell Major, 2013; Sikes, 2004; Chacko, 2004).

12 Manila workshop (March): 23 external participants; Kathmandu workshop (May): 36 external participants. London conference (July): 43 external participants. See list of project documents and reports at the end of this working paper.

# 3. Understanding recovery

## 3.1. Recovery contexts

The case study sites (two locations in the Philippines and one in Nepal) present significantly different contexts. The researchers were not seeking to carry out a comparative case study, rather to learn and make observations from the different settings in order to enhance understanding of self-recovery and promote safer building.

The fieldwork revealed different features of self-recovery, as well as the wider contexts within which people recover after a disaster, through looking at individual, household and community priorities in the process of self-recovery and the strategies that they use to meet their needs. People experience natural hazards, including climate variability, stresses and shocks in different ways. This is influenced by the different political, environmental, social, cultural and economic contexts within which they live, together with the quality and condition of the built environment, which can constrain or enable their ability to prepare for, cope with, respond to and recover from disasters. Following a disaster, those who have been affected are the first to respond, but their recovery trajectories are shaped by different actors, access to various resources, technical expertise and levels of support/ownership (Schofield and Miranda Morel, 2017).

The field research highlighted three significant contexts: governance, the environment and socio-cultural factors.

### 3.1.1. Governance

Government approaches to recovery and reconstruction were very different in the two countries.

In Nepal, central government played a dominant role in the reconstruction process. Owner-driven reconstruction and earthquake-resistant housing were central tenets of its vision for recovery. It promoted housing types (incorporating features aimed at increasing structural resilience to future events), provided financial support for housing reconstruction and gave some technical support (through the provision of engineers to each VDC to accompany households in the reconstruction process). The government's insistence on a specific approach forced humanitarian practitioners to work within limited parameters. The NRA set the agenda; NGOs could support shelter recovery only through training and technical assistance.

The scale of the destruction and the geographical isolation of many communities had a significant impact on the speed of recovery, but this was also due to the slow pace at which the government distributed cash grants and the conditionality of these grants, political instability and change in government, and the lack of technical expertise. A government grant of 200,000 Nepalese rupees (NPR, equivalent to US $2,000) to affected households for rebuilding – later increased to NPR300,000 ($3,000) – was made available and widely publicised, but disbursements of the first tranche did not begin until July 2016 (Asia Foundation, 2016) and it was not completely disbursed until almost two years after the event. At the time of the project's field visit, most eligible and enrolled households had received the first instalment of NPR50,000 (approximately $500), but households were uncertain when the remaining two tranches would be disbursed.

> *We found out about the NPR 50,000 after six to seven months, some got the money three to four months ago and some are still in the process of getting the money. We built the temporary shelters because we couldn't live in the tents for much longer.* (Male interviewee, Mulpani, Nepal)

> *About 75 houses are in the process of reconstruction, they just received NPR 50,000 so some have begun clearing and for those that have houses left standing, they have used the money to clear the rubble. The house has to be cleared, by which time the money is finished. With 50,000 we can dig the foundation and start the wall but that's it.* (Male interviewee, Mulpani, Nepal)

The grants were conditional upon compliance with the government's construction requirements. The shortfall between the cash grants on offer and the cost of a finished house meant that at that time many of the affected households in Nepal had only received the first tranche of money and had not been able to fully rebuild (Asia Foundation, 2017). In the absence of timely governmental support, many households had turned to community banks for reconstruction loans, often with very high interest rates.

The conditionality of the grant and the shortfall significantly affected self-recovery processes. It was clear from interviews and focus groups with community members that it meant that structural safety regulations dominated shelter reconstruction. Day-to-day life was consumed by considerations and discussions of housing safety and reconstruction techniques in ways that it had not been in the past:

*Before [the earthquake] there was life and houses and we had a sense of safety and security. We could sleep. Now, since the earthquake our way of life is not certain or the same. We are only ever thinking about how to build a safe shelter but we have also lost our sense of safety and security. Before, nobody was bothered about building a safer house and now everybody only talks about safer houses.* (Female focus group, Chimchok, Nepal)

The emphasis on approved construction types may have slowed down the recovery of people engaged in home-based livelihood activities, such as shops and teahouses. These traditionally have wide openings, but had to take account of new building regulations.

By contrast, recovery after Typhoon Haiyan in the Philippines was a far more decentralised process. Local Government Units, *barangay* councils and captains played a significant role in the distribution of Emergency Shelter Assistance (ESA) cash grants from the government, eligibility for which was based on damage to houses.[13] *Barangay* captains were important in recovery, acting as the bridge between municipal governments and affected communities.

The grants and support offered by the government, though intended principally for the purchase of construction materials, were ultimately non-conditional, giving households more choice and ownership over their recovery expenditure. Eligible households had more flexibility to use the ESA provided by the government to meet other priorities for recovery, such as paying debts or investing in their livelihoods. Perceptions of recovery were not dominated by an imposed shelter focus, and households had greater control and ownership of how they understood and framed their own (self-)recovery.

*I have kind of recovered already because I'm slowly getting my livelihood back together … I'm not totally recovered though. I haven't totally forgotten what happened. Every time I see a house with plastic sheeting I remember my experiences. Now I have new things to plant though and not just root crops. I've got the hog raising too.* (Female interviewee, Cambucao, Philippines)

In contrast to Nepal, housing in rural Philippines is made of lightweight materials, typically timber or bamboo, meaning that it is cheaper and can be rebuilt relatively quickly. Following Haiyan, households often rebuilt temporary or more permanent shelter immediately, using materials that they already had access to.

Following Typhoon Haima, the Government declined offers of international assistance and led the humanitarian response itself, through decentralised channels. As a result, there was not as much funding assistance to support the response process. Families and communities often experienced a shortfall between the assistance provided and their goals for recovery.

Overseas workers from the Philippines supported their families in reconstruction and recovery. However, this also influenced the amount of assistance that the household could receive. Members of some households explained that they did not receive any money from the government because they had family members working overseas. Moreover, those who had a family member working as a 'government worker' or in the public sector in the Philippines did not receive any government assistance either. In both instances, respondents felt this had a negative impact on their recovery, because it did not consider their expenses, outgoings or debts.

### 3.1.2. Environment

The environmental context has a strong influence on recovery trajectories and strategies. Although in general the communities visited in the Philippines tended to have better access to roads, services, transportation of goods and communications technology than those in Nepal, the more remote mountain communities visited in the Philippines did indicate in focus groups that landslides, which occur throughout the year, caused them to feel 'isolated'. They imagined recovery from Haima as a state that would include improved access to the municipal centre and a better transportation system. In Nepal, access to communities in the mountains is a significant challenge: travel can be expensive and is frequently interrupted, particularly during the rainy season.

In the Philippines, typhoons and tropical storms are experienced fairly frequently, to the extent that they are said to form part of 'the fabric of everyday life' (Field, 2017: 337). Consequently, investment in shelter repair and reconstruction is required relatively regularly. However, the population is aware of the risks, and early warning for typhoons is fairly accurate, giving people time to prepare for events, including taking shelter and protecting valuable assets.

In the communities visited by the project team, households were attempting to recover from Haiyan and Haima within the context of multiple environmental hazards (including flooding and earthquakes). In some communities, the impacts of localised flooding were considered more problematic than larger-scale typhoons, as they affected people more frequently. After Haiyan, some households built features, such as raised flooring or an extra storey to their house, during reconstruction in order to minimise the impacts of flooding. Nevertheless, in doing so, they were arguably increasing the structural

13 Households were disqualified from receiving ESA if they lived in 'no build zones', earned more than 15,000 Philippine pesos (US $290) per month or had received shelter assistance from another NGO.

vulnerability of the house to future typhoon events, demonstrating the trade-offs to be made when making decisions for recovery in a multi-hazard context.

> *We built two floors so that we can transfer to the second floor when it floods … It's safer to flooding but not to Yolanda [Haiyan].* (Female interviewee, Badiyangay, Philippines)

Varying levels of progress in shelter recovery were observed in the different community visits. In general, the rebuilding process began and progressed relatively quickly. However, a key message from almost every community visited in both Leyte and Luzon was that increasingly unpredictable wet and dry seasons were disrupting recovery strategies. In particular, droughts associated with the strong 2015–2016 El Niño weather event had affected crop yields and, hence, household incomes.

Access to transport infrastructure, and its vulnerability, were highlighted in a number of community discussions. Many people reported a sense of isolation due to roads and bridges becoming impassable (because of landslides, river swelling and erosion), and of this hampering the early stages of recovery. In addition to isolating whole communities, features of the natural environment were also seen to form physical (and social) barriers *within* communities. In one location, we observed a small river separating one part of a community from the rest. The separated part was poorer and noticeably further behind in terms of their shelter recovery. When the people living there were asked what would help them most in their recovery, they spoke of the need for a strong bridge to link them to the main community.

Severe events in Nepal tend to be less frequent, but to have devastating impacts. There are no warnings for earthquakes, and perceptions of earthquake risk tend to decrease over time as experiences are forgotten. Families prioritise everyday tasks, such as securing livelihoods, food and water, over others that may mitigate earthquake risk. Nepal experiences a range of other, more frequent hazards, including flooding, landslides and wild fires. These are not generally perceived as being as dangerous as earthquakes, and fewer institutional and economic resources are invested in mitigating them.

Nevertheless, the impact on recovery of living in such a dynamic hazard environment was significant in the communities visited. Besides the direct effects of the April 2015 earthquake and its aftershocks on shelter and people's confidence in the behaviour and stability of the earth beneath them, many communities, and the access routes leading to them, continued to be affected by landslides and rock falls. People reported that local water supplies had been disrupted by the earthquake, both temporarily and in some cases long-term. Farming land and irrigation systems had been damaged or lost. Many roads were affected by earthquake-induced landslides in 2015, but further damage to roads in subsequent monsoons also impeded recovery by requiring community members to direct their efforts towards road repair rather than rebuilding their houses. Trucks were forced to carry smaller loads on the damaged roads, which required more deliveries and drove up the cost of transporting materials: the reconstruction NRA grant did not include a contingency for this. Communities are now exposed to a changed geohazard landscape, with landscape instabilities occurring in places previously considered safe. In some cases, where slopes had become unstable, relocation was the only option, but this was far from straightforward because of the limited power of the communities, the heavy demands on government and the difficulty of identifying safer locations.

A series of aftershocks in the days and weeks following the first major earthquake, as well as the landslides that resulted from them in some locations, served to prolong a sense of fear of the environment and future risks. Many people were very afraid that another large earthquake might happen, and were reluctant to rebuild as a result:

> *It will take time to feel back to normal because we are still scared of shakes and we feel as though this area is prone to landslides. We are more scared of landslides. Before we did not think about earthquakes, but landslides have always been here.* (Male focus group, Tawal, Nepal)

Communities were often reluctant to return from nearby displacement camps to their previous settlements, or to make a start on clearing debris for reconstruction, out of fear of landslides, rock falls or the collapse of remaining buildings. Moreover, the monsoon period, which occurred when many communities were still in temporary shelters, held up recovery efforts. The heavy rains and flooding made debris clearance and reconstruction a challenge, and led to increased instances of sickness, particularly among children and the elderly, further delaying households' ability to recover:

> *After the earthquake was the monsoon so we couldn't work on the housing. We somehow managed to live but it was too hard to keep draining the water away to rebuild.* (Female focus group, Tawal, Nepal)

Adapting to geohazards can entail significant cost. This affects the recovery process of some communities directly, requiring them to move to safer locations, and it affects most communities indirectly by creating greater vulnerabilities in the infrastructures (transport, water, energy) that connect and serve them.

### 3.1.3. Social/cultural

The social and cultural context in which people live reflects inequalities, differential access to information and services, power relations and belief systems, among other features. Marginalised groups (for instance children and youth, older persons, women, people with disabilities, indigenous populations and migrant communities) are affected by disasters in different ways. While these differences are critical to understanding how a person is able to recover following a disaster, disaggregating data by different socioeconomic and cultural factors was, unfortunately, beyond the scope of this project.

It is known that factors such as gender, race, ethnicity, religion and belief systems impact differently upon people's ability to recover from disasters (Bolin, 2006; Enarson et al., 2006; Wisner et al., 2004; Peacock et al., 1997; Bolin and Bolton, 1986). In Nepal, research suggests that marginalised groups, such as those from lower castes, were more likely than other social groups to still be in temporary shelters two years after the 2015 earthquakes (Asia Foundation, 2017). However, due to the fact that the team had limited time in each community (in both countries), it was unable to fully explore the complex roles of socio-cultural factors such as class, caste, ethnicity, religion and belief systems in influencing a person's ability to prepare for, cope with and recover from a disaster.

Community organisation came across very strongly as an important socio-cultural factor in the Philippines. The Filipino tradition of *bayanihan*, or community cohesion and mutual support (Bankoff, 2007), was said to have greatly facilitated community recovery. People grouped together to build the shelters of other community members, usually beginning with typically vulnerable groups such as female-headed households or the elderly. While *bayanihan* was highlighted in every community the team visited, it is important to remember that it sits within a wider structure of economic, social and power relationships and differences in society that influence community-level decision-making about disasters (Allen, 2006). CARE's Typhoon Haiyan evaluation found that *bayanihan* was of significant value in cohesive, mainly rural, communities, but did not add much value in less cohesive, mainly peri-urban, communities, and that it was also sometimes seen as an outdated idea (Newby et al., n.d.).

Other participants highlighted the role that international NGO assistance played in their ability to recover. Many respondents stated that they would prefer the community to have support based on blanket coverage rather than targeted interventions, because the latter can risk altering communities' social fabric, leading to new power dynamics and challenges. Community savings groups and seed banks were evident in many of the rural farming communities, often supported by local humanitarian agency implementing partners, to help households to pool resources to support livelihood recovery and investment in farming equipment that would benefit the whole community.

> *The pipeline canal used for irrigation was destroyed so they asked money to government and they contributed manpower so now they use it again. It's only a temporary fix, not permanent, it irrigated 26.1 ha of land. It would be very hard to do this farming without it. After two months they had completed a temporary fix but that's only 25% of the capacity. They did this without government support. Everyone that owned a field contributed to the labour.* (Male interviewee, Mulpani, Nepal)

In Nepal, community organisation was also common but seemingly less formalised than *bayanihan*. In the immediate aftermath of the earthquake, people grouped together to carry out search and rescue activities, cooking and the construction of temporary communal shelters. During reconstruction, residents in rural communities described exchanging labour with other community members on a rotational basis. These reciprocal practices reflected the ways in which the communities also typically managed agricultural lands. The longer-term impact of these community practices and social dynamics on recovery and social cohesion was beyond the scope of this project, but would make an interesting area for additional research. Spontaneous, 'emergent' action by self-organising, voluntary groups and individuals, which is a common feature of disasters everywhere, is recognised to be an important resource and capacity for emergency response (Twigg and Mosel, 2017; Drabek and McEntire, 2003).

## 3.2. Key themes in self-recovery

### 3.2.1. Ownership, choice and empowerment

Disaster-affected people should be able to make choices on the basis of good advice, engineering and science, with the choice and setting of priorities remaining with the family or community (Crawford et al., 2016). Yet sometimes there is little or no choice, especially for the poorest and most vulnerable. The research demonstrated that there is value in ongoing accompaniment, supervision and training for households, for housing reconstruction and hazard mitigation, and also to help respond and adapt to environmental and market changes.

Disaster-affected families and communities expressed a desire to be leaders, drivers and decision-makers in their recovery, but they acknowledged barriers to achieving this. In the Philippines, even after three years, shelter recovery was often seen as slow and piecemeal, rarely reaching a point at which people could claim to have fully recovered. There were a number of reasons for this, primarily linked to people's priorities and their strategic thinking. Some individuals demonstrated a clear pathway of choices that they hoped to make to improve their quality of life, while others were living day by day. Often, people described their circumstances before the typhoons, and the challenges they

had faced before the disaster, particularly debt, poverty and limited livelihood opportunities. The disaster had only made these worse. Therefore, they would ask, how could they ever reach 'recovery'? This was echoed in Nepal, where many people were in debt before the earthquake and became more indebted afterwards as a result of conditions attached to the government's housing reconstruction grant (see section 3.1.1).

Evaluations of CARE's Haiyan response showed how distribution of small grants of money from aid agencies can initiate extensive house building and repair; and our observations substantiated this (Flinn and Echegaray, 2016; Newby et al., n.d.). The technical quality and take-up of BBS messages was mixed, although many families felt that they were now 'safer'. The degree of 'ownership' is impossible to measure, but observation and anecdote suggest that the self-recovery approach, with its freedom to choose, resulted in satisfaction and pride in the end result.

### 3.2.2. Recovery pathways and priorities

> *Recovery to me means to start again. To get strength. To be able to repair damaged houses. To be encouraged to get up and start again.* (Female interviewee, Balong, Philippines)

People's perception of recovery varies from family to family, changes over time and proceeds at different rates. This occurs within a dynamic socioeconomic, natural and political environment that also shifts and changes at different rates. Recovery can mean many things: preparedness, sleeping well at night, having a house/home. One day it can involve focusing on shelter, the next, a focus on livelihoods. For some typhoon-affected communities in the Philippines, their first concern was for their families and then the recovery of their water systems.

The first activities undertaken by households and communities in both countries were to meet basic needs – in particular food, water, protection from the elements and security.

Shelter construction in the immediate aftermath of the disaster was consistently cited as a priority. In some cases, this shelter was intended to be temporary, but in others, particularly in the Philippines, temporary shelters were incorporated into more permanent structures as people modified these incrementally over time. In Nepal, communities frequently relied on community self-organisation to build temporary communal shelters housing several families, whereas family shelters were more common in the Philippines.

> *There is a mill nearby so I stayed there for three months. After that I came here to this temporary cottage. I built this after the earthquake; I used tarpaulin with hay underneath. People from the village helped me rebuild. We helped each other build these temporary shelters. I lived here for a year and a half.* (Female interviewee, 60 years old, Salyantar, Nepal)

> *We immediately built a small shelter, this bit here in the centre [of the house]. It's a bedroom now, but it was our whole house then. Once we had put the shelter together we went to work straight away. Yolanda [Haiyan] happened in November and we built the shelter. By December we had started to work and in March we received shelter assistance.* (Male and female interviewees, Cartoogan, Philippines)

In the Philippines, families repeatedly stated that, once they had some form of temporary shelter, they quickly shifted their focus to recovering livelihoods. Cash crop farmers and wage labourers described returning to their farms, often within days of the event, to try to salvage any crops that could be harvested and to repair the paddy fields.

> *People here do not own the fields, we only work on them so there was no work afterwards.* (Male interviewee, Dilag, Philippines)

**Box 2: Group recollection of immediate responses to disaster**

*The day of the earthquake the ground was shaking and it was hard to get of out the house. The ground was shaking in the terraces, it looked like a snake. After about three minutes of shaking, some houses fell and the remaining ones collapsed soon after. There was a big aftershock about 15 minutes later. That collapsed the rest of the houses. Landslides continued after for 30 minutes and for three or four days there was continuous loud noise as if there were strong winds … Then we started calling our relatives, looking for neighbours, but the line was down. Went to the terraces after that and started building the tents … That day it rained hailstones, and 70 days later there was another earthquake. Some houses that were not destroyed were not safe. Some slept in the temple and some looked for a safe place to sleep under a haystack. Many people were hungry, only drank tea and water and some ate junk food. The tap was not affected and is still good for drinking. Others went to houses and ate the remaining food. About five to seven days passed before we got food relief from different organisations, this came by road. There were some cracks in the road but it was okay. We stayed in the tents five to six months. Slowly people began returning to their homes. Most of them destroyed the upper storeys and repaired the lower ones and used corrugated galvanised iron (CGI) sheets to make temporary shelters. They have been living in these since …* (Mixed focus group, Mulpani, Nepal)

Pathways to recovery are also strongly influenced by pre-disaster conditions. For example, in Nepal many whose houses were destroyed or damaged by the earthquake in April 2015 were not eligible for government grants because they lacked legal title to their land: these included families living on *guthi* land,[14] families living for years on government land or marginal land, and grown-up offspring who had built houses on their parents' property, but did not have separate title. Most of these were very vulnerable poor families. Their recovery was compromised through lack of financial support; their houses, if they had managed to rebuild, were not safer or more earthquake-resilient. In the Philippines, many households and families are tied to their land through their livelihoods, which was a constraint on their taking advantage of government support that could assist a move to other, less hazard prone, locations.

In Nepal, after the earthquake, the predominant building stock in the rural areas visited by the project team had changed from multi-storey buildings, with multiple rooms and spacious storage areas, to single-storey buildings with two ground-floor rooms and sometimes an additional attic space. In interviews and focus groups, individuals frequently referred to the downsizing of their dwellings as one of the main ways in which the earthquake had affected them. Reduction in house size can have implications for economic recovery (lack of space for storage) and social wellbeing (overcrowding or domestic tensions) and it is likely that households will seek larger living spaces as their economic capacities recover over time. However, future additions to buildings, which are most likely to be upwards, may increase seismic risk.

### 3.2.3. Livelihoods

Research repeatedly shows that disaster-affected households and individuals take steps to recover, and establish and/or diversify livelihoods in the aftermath of disaster, even where livelihood interventions do not take place. Diversification of livelihood strategies is a common and core coping and recovery mechanism, particularly in the rural context. For example, when disasters destroy agricultural lands, wage labourers may seek to diversify incomes by moving into non-farming activities (Masud-All-Kamal, 2013).

In the Philippines after Haiyan, following the construction of some form of shelter, most affected households quickly turned their attention to recovering their livelihoods, at which point livelihood development became the priority (Flinn and Echegaray, 2016). Livelihood recovery interventions in the Philippines were often viewed favourably by community members because of their resilience-building potential, such as allowing families to purchase livestock to rear and sell. In a number of communities, families opted to pool the livelihood cash assistance to invest in replacing or repairing more costly farming infrastructure, such as rice mills, which would benefit the recovery and resilience of the entire community, not just those targeted.

The field surveys in both countries found that households and communities with shelters still felt that they would be unable to fully recover until their livelihoods had been re-established. Livelihood self-recovery was challenging because of indebtedness or the lack of finances required to restock materials, tools and livestock. In some farming communities, pre-existing debts to landlords meant that simply restoring livelihoods was not always possible, and 'recovery' was often described as unattainable.

Many households in the Philippines looked to livelihood diversification as a key means of recovering after the typhoons. The widespread destruction to agricultural lands, particularly coconut trees (which can take up to 10 years to regrow), forced some families to diversify their sources of cash crops from coconut to root crops such as sweet potato and cassava. Other households switched entirely from farming to construction, as a means of diversifying incomes as well as responding to demand during the recovery period. Many farm workers in Nepal and the Philippines subsequently offered their services to the construction sector to re-establish household incomes in the recovery period.

Overseas workers and remittances played a significant role in the livelihood recovery of families in Nepal. Many communities had a high percentage of males working overseas. After the earthquake, these provided financial support for reconstruction. In other cases, overseas workers returned home to help with the reconstruction, and only once this was finished did they return overseas. Training of masons in housing reconstruction formed a central component of the humanitarian response to the earthquake. Concerns were expressed that this might subsequently lead to an increased number of trained individuals leaving Nepal in search of better paid work elsewhere, although at the time of the fieldwork there was no evidence of this. For those not engaged in work overseas, in the more remote mountain locations that were visited, livelihoods based on the sale of locally made products, such as woven baskets, had been difficult to recover due to the destruction to transport links which provided access to markets.

### 3.2.4. Psychosocial recovery

In both countries, the trauma caused by the impact of the events was still evident. When discussing what recovery would ultimately look like, people spoke of being able to sleep at night, feeling safe or being able to forget about

14 *Guthi* is a traditional Newari kinship structure and a form of institutional landownership. The *guthi* system is a trust to which land is donated and then cultivated by members of the local community: the revenue generated provides income to the community and is used for public works and festivals.

what had happened. Families interviewed in Nepal were particularly anxious about the safety of their houses if they were subjected to further earthquakes. It was clear that people were taking action themselves to recover psychologically, in the absence of adequate mental health services supported by the state or humanitarian agencies. Their actions included drawing upon existing social support networks or creating new ones, and spending time with family, friends and other community members to share experiences, provide emotional support or engage in faith-based practices. In Nepal, mothers' groups in existence before the event, where groups of women of all ages would meet to discuss day-to-day difficulties and challenges, were described as important support mechanisms.

While people sometimes found it a challenge to articulate their understandings of recovery (a factor compounded in Nepal by there being no equivalent term for 'recovery' in Nepali), they often found it much easier to discuss what advice they would offer others attempting to recover psychologically, which provided insights into people's understandings and strategies.

**Question: If you had to go to another community impacted by an earthquake, what advice would you give them about how to recover?**

**Answers:**

*That an earthquake is a natural process. Please stay safe. Do not worry about other things – about how to build or where to build. If an earthquake happens then the government will support you, but then you must only build a safe house.*

*Visit others, visit your relatives, those that were not affected [by the earthquake] so that you will see that some places, and some things are still normal and OK.*

*Share your feelings, talk to people. This will help you to feel better.*

(Female focus group, Chimchok, Nepal).

**Question: If you had to go to another community impacted by a typhoon, what advice would you give them about how to recover?**

**Answer:**

*They should engage in* bayanihan *and in traditional practices that can help to cleanse the soul. They should strive. Look for sources of work/livelihoods, cash and raise animals. They should plant other vegetables and varieties of food. Think about diversifying that might not all be damaged rather than having monocrops.* (Mixed focus group, Balong, Philippines).

### 3.2.5. Recovery as preparedness

When discussing the meaning of recovery, many households saw it as a process that included understanding what to do to 'prepare' for future events. In the Philippines, this was evident during the participatory timeline mapping, in which participants identified the activities that they carried out before, during and after Typhoon Haiyan. The exercise encouraged them to reflect on how much they had underestimated the strength of the typhoon, based on their previous experiences, and the relative frequency with which warnings were issued. Participants discussed how, with hindsight, weighing the roof of their houses down with coconut branches, a preparatory measure that they had taken for previous events, was never going to be sufficient for the Category 5 storm that arrived, and that they should have evacuated to a structurally stronger building earlier than they did. In other instances, however, they spoke of holding onto rice plants in the fields after their house had blown away. When asked if they would do anything differently in the future with a similar early warning, they said that they would not know what to do differently (due to the absence of safe evacuation spaces), and therefore their response, as inadequate as it now seemed, would need to be the same.

Despite these reflections, uptake of the BBS messages being promoted by NGOs in reconstruction was by no means uniform, with most households adopting only a few, if any, of the messages, despite often being able to recite them all. When asked why this was the case, residents would frequently cite lack of economic resources or technical expertise, while others implied it was not a priority. Moreover, in some instances, people had rebuilt a shelter by the time material resources and technical training arrived from outside, and it was too late to implement the messages. Often materials were subsequently used for building shelters for livestock, making additions to their homes or stored for later use.

### 3.2.6. Learning, knowledge exchange and technical assistance

In both countries, there was limited access to reliable and appropriate information about hazards, hazard mitigation and safer construction methods, despite the need for such information to allow communities to make informed choices. People in the communities visited by the researchers expressed a desire to receive more information about the safety of their houses; relocation; how to handle, mitigate and manage hazards; and how to adapt their livelihood activities to the changing nature of the soil and other environmental factors, as well as to changing markets. Interviewees would often state that they were unsure about the advice they were being given, or if they were following it correctly.

Although (especially in Nepal) the process of defining BBS messages (see section 3.3) went through endless

Photo: Andrew Finlayson, 2017. BBS message poster in Ruar, Northern Luzon

iterations, the messages did not always take into account the varying skill levels of masons and carpenters and the socioeconomic priorities of the households. The transfer of knowledge was not considered as a two-way process, in which NGOs and local partners act as intermediaries or brokers of both external/scientific and local/indigenous knowledge. Studies in Nepal and the Philippines show that communities often have a wide range of methods and practices that have been developed over generations to help them to mitigate the negative impact of hazards (Shaw et al., 2008), although this project's field research suggested that the level of scientific knowledge of hazards and the environment in the communities visited was relatively low. However, these findings are very preliminary and much more in-depth investigation is required before firm conclusions can be drawn.

> *We used to think that earthquakes were caused by gas from the magma but since the earthquake happened the government have explained that it is because of plates but we don't know what the plates are.* (Female interviewee, Baseri, Nepal)

In Nepal, it was difficult to gauge the extent to which different types of information and knowledge were informing individual decisions. Much of the information used enters the system through regulations or guidelines, or the actions of others such as community-based NRA engineers. The researchers did not find evidence in these communities that community-scale hazard maps were being used. When it came to using technical information for reconstruction, several interviewees expressed concern about whether they were using it correctly. Recent research also indicates that organisations working on DRR in Nepal have knowledge of earthquake science in general, but the science is less commonly applied to specific plans and actions. Local scientists are not strongly connected to international aid organisations, and earthquake science is not sufficiently integrated into training for engineers and planners (Oven et al., 2016).

Access to, and use of, information provided by scientific organisations or government agencies (e.g. hazard maps) was not strongly evident in the communities visited in the Philippines either. Where it was held locally, it was often not at a relevant scale or accessible to individuals and households. However, there was evidence that hazard information was reaching communities via a chain connecting provincial DRR officers (who have access to the national hazard maps) to municipal DRR officers, who then liaised with CARE Philippines and their implementing partners, who took the hazard advice to the communities. DRR officers have also been invited to take part in hazard mapping exercises and evacuation drills. Maps produced by community mapping exercises contained more relevant local details (e.g. individual households, homes of senior citizens, local evacuation centres). Community engagement with hazard mapping seems to be influenced by the severity of the previous disaster: in the communities affected by Typhoon Haiyan on Leyte, the maps were very detailed at the community and household level.

**Box 3: Ancestral knowledge**

*Our ancestors have taught us not to go in certain areas … Before, there was a strong typhoon and our community was living where the rice fields are, but during the typhoon our ancestors saw that the trees were not falling in this area, so they told us to move here … They have also taught us that we have to protect the community and guide future generations. This is why we have restricted the slash-and-burn practices and plant trees to replenish their source … We have observed more landslides over time and that during the rainy season the volume of water has increased ... Our ancestors have also taught us to identify the cracks on the side of mountains to know where there will be a landslide.* (Comments at a community meeting in Balantoy, Philippines)

The country case studies indicated the presence of substantial indigenous knowledge, including knowledge of the landscape and of vernacular building practices. In Nepal and the Philippines, it was clear that local people are highly aware of their environment, and experienced in coping with life and livelihoods in dynamic, and at times dangerous, settings. They also draw upon local (or indigenous) knowledge and experience to reduce their risks from geohazards. In the Philippines, people's understanding of hazards appeared to come primarily from first-hand experience (typhoons occur regularly, for example) and through transfer of ancestral knowledge. For example, in a mountain community that was visited, elders had taught younger community members about landslide-prone areas, and how to look for tension cracks that indicate slope instability. In Nepal, scientific knowledge of hazards and the environment appeared to be relatively limited. For instance, many people that the team spoke to did not know how earthquakes and landslides were caused, nor where they could find this information.

More education on these subjects (starting at school level) would, of course, be useful, but better understanding of how to respond to and manage the environment, rather than the underlying causes themselves (e.g. why earthquakes happen), is likely to be more helpful in the shorter term. This might also go some way towards increasing people's ability and confidence when applying technical information/guidelines. Furthermore, although access to usable information is crucial, having the power to act on that information is vital and there were indications that this could be a critical issue for some of the people in the communities we visited. This requires deeper investigation but again highlights the importance of creating an 'enabling environment' in which self-recovery can take place.

Knowledge brokers or intermediaries have a potentially important role in facilitating access to and use of scientific information for self-recovery. Anecdotal evidence suggests that NGOs were already taking this role in the Philippines (e.g. CARE and ACCORD) and there was some engagement with communities on geohazards in Nepal (the NRA engineers). There could be opportunities for more recovery actors to operate at the interface between those who produce knowledge and those who act on it, and to develop structures and relationships to support this. Assessing which actors (such as humanitarian organisations and their partners) might be best placed to take on this role, either formally or informally, requires further research.

Local knowledge of technical aspects of hazard-resistant structures clearly influenced the nature and extent of recovery taking place in both countries. In the Philippines, the availability of materials, coupled with knowledge and confidence regarding building practices, led to more resilient structures being built by households, which made rapid decisions and began reconstruction or retrofitting almost immediately after the disaster. In Nepal, where most of the population in the affected areas was experiencing a large magnitude earthquake for the first time, and there were more stringent government conditions, households required more time and support. They proceeded at a slower pace, often starting by building temporary shelters and holding off the reconstruction of permanent housing until they had sufficient technical and financial means to build to the required acceptable standard.

The nature and level of technical assistance differed in the two countries. In the Philippines, the community members who received training to carry out the technical oversight of reconstruction and repair did not necessarily possess specific technical knowledge or experience prior to the event. On the other hand, the scale of the technical changes that the Government of Nepal decided to implement required a much more structured and skilled programme for provision of technical assistance, which was one of the principal challenges to the reconstruction programme throughout the country. The level of technical assistance appeared to vary substantially from region to region, with significant impact on the ability of rural communities to comply with the conditions of the NRA grant.

## 3.3. Building back safer

*Our house is slightly damaged. As much as I want to have a better house, I still have to send my children to school. But if given a chance, I want to prioritise the flooring for the safety of my children. I also want to have a roof over my kitchen.* (Female interviewee, Badiangay, Philippines)

A house is many things: shelter, protection, a venue for livelihood activity, a healthy and climatically suitable environment, and a home with all its emotional and relational aspects. Structural safety is one aspect in this mix and an emphasis on structural safety can sometimes be at the expense of other housing priorities and day-to-day functions. This has long been understood within the shelter sector, and the evidence from Nepal and the Philippines supports that view.

Reconstruction programmes seek to ensure that they do not merely reproduce pre-disaster risks and vulnerabilities, but make houses more resilient than before, by incorporating building techniques and materials that increase safety. The BBS approach is not a new objective in programming, although it has gained momentum within international humanitarian agencies in recent years, particularly since the 2004 Indian Ocean tsunami, which led to a surge of interest in more holistic approaches towards reconstruction and recovery, addressing physical, social and economic conditions to achieve resilience (Mannakkara and Wilkinson, 2013; Kennedy et al., 2008). BBS messages have been adopted to embed appropriate improved construction techniques into emergency response. In this context, 'safer' needs to be considered in relation to three critical factors: the nature, extent and magnitude of the disaster hazard event; the quality of building construction before the disaster; and the availability of financial, materials and skills resources locally in the disaster area. These provide the baseline against which to assess post-disaster reconstruction choices. Occupants' choices and decisions are also strongly influenced by the perceptions of risk associated with recovering.

The prevalence of traditional building typologies in the rebuilt dwellings was more apparent in the sites visited in the Philippines than those in Nepal. This may reflect the fact that typhoons are far more recurrent than earthquakes, and hence communities are used to rebuilding their houses in the same design on a regular basis. In the Nepal earthquakes, traditional buildings suffered extensive damage, affecting the population's perception of the safety of traditional construction, and government policy promoted alternative construction practices.

### 3.3.1. The Philippines

Typical houses in the Philippines in the places visited by the researchers were built of timber frames with shallow foundations and limited use of wall bracing. Square framing was used, with wall panels connected to roof systems by nailed connections. Roofing ranged from simple A-frame systems to more robust truss structures. Cladding systems were typically highly permeable, composed of bamboo woven into a range of patterns. Likewise roof cladding is permeable, with nipa (reed) or cogon (grass) typically used (Figure 6). These features are characteristic of the traditional *Bahay Kubo* houses observed throughout the Philippines in lowland rural and coastal areas (Fernandez, 2015).

This building typology was also predominant in the post-disaster shelters, but CGI roofing had replaced more permeable, traditional roofing in many locations (Figure 7), while use of less permeable walling materials was also evident, although to a much lesser extent, in the form of CGI sheets and fibre-cement board. Aside from these features and the occasional use of ties and straps, observation suggested that little alteration was made to post-typhoon shelters compared to what had existed previously. In both case study locations, despite the variation in the level of reconstruction required, traditional building forms and design features were used to reconstruct or repair post-disaster shelters.

Feedback from communities revealed that the continued use of traditional construction systems was in response to protecting against more common and recurring environmental hazards, such as extreme heat. In some

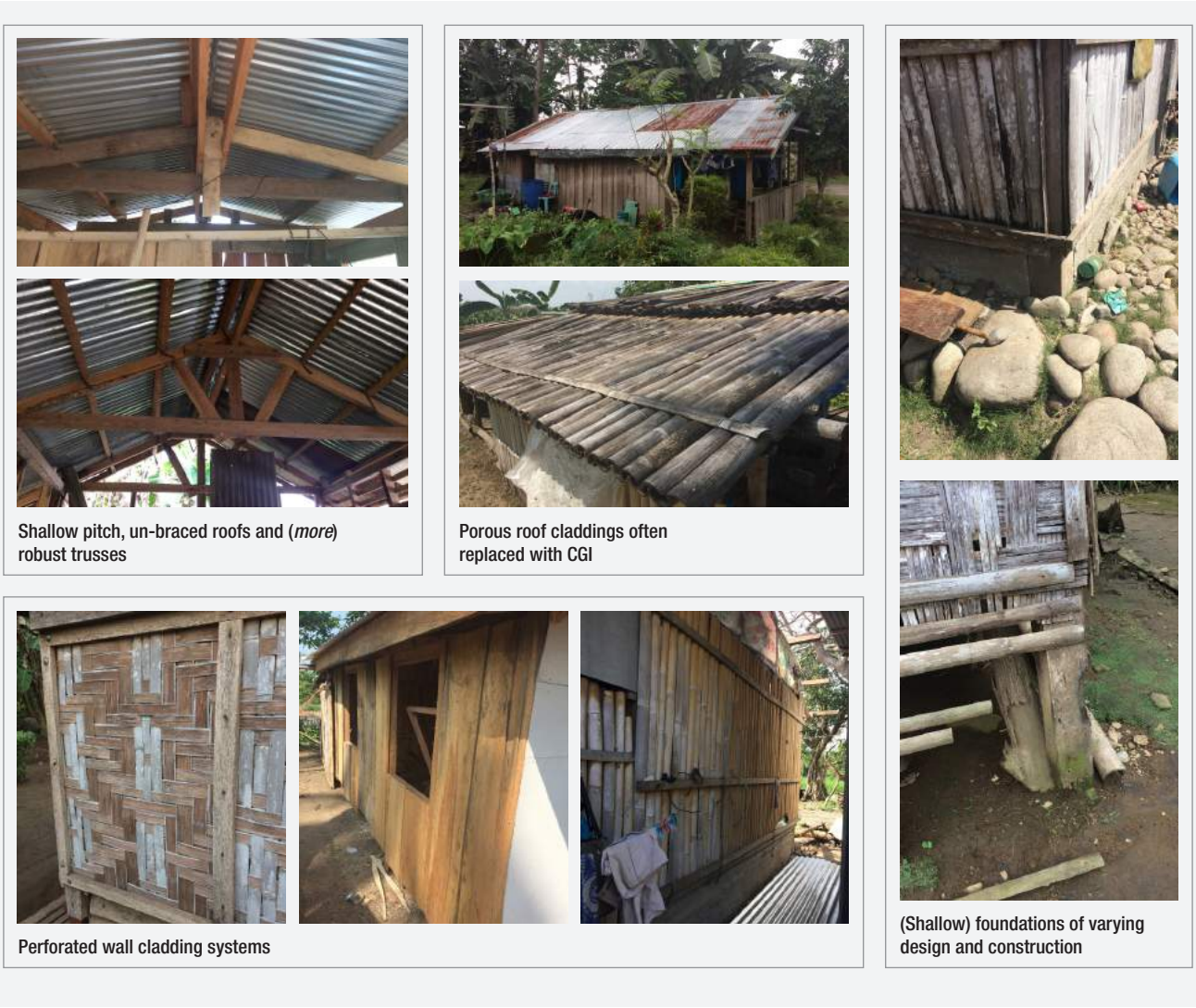
**Figure 6: Cogon roofing**

*Source: Victoria Stephenson, 2017*

**Figure 7: Central roof slope rise for possible wind deflection**

*Source: Victoria Stephenson, 2017*

**Figure 8: Building typology features observed through case study assessment**




*Source: Victoria Stephenson, 2017*

cases, householders chose to incorporate building materials from INGOs into a larger scheme in which traditional building techniques remained prevalent. In other cases, traditional design features were attributed to the ability to reduce typhoon-related risks, for example, roof shaping designed to deflect wind loading (Figure 7).

This trend was evident from observing the buildings themselves, and through speaking with homeowners, who were keen to highlight traditional features used in their houses. Even in locations where BBS messages were heavily encouraged, through noticeboards, training and roving team checks, the post-disaster houses largely reflected traditional construction systems. While homeowners were appreciative of the support provided by the INGO messages, their priorities for their homes did not always tie in with the external safety-message objectives. This was observed in both regions visited, although far more often in Leyte, where reconstruction was needed to a far greater extent.

Where alternatives to coconut timber were available, more robust structures were evident. These consisted of hardwood timber, more substantial framing systems and roof systems with more truss elements and bracing. These structures were built largely because of the availability of materials and funds with which to purchase them. This trend was different in the two locations. In Leyte, after Haiyan, there was extensive use of coconut for construction. This was due to several factors: existing lack of hardwood and government restrictions on access to it; the availability of large amounts of coconut lumber from trees that had been blown over by the typhoon; and reuse of timbers from damaged houses. In northern Luzon, where there is more forest cover and hardwood is still prevalent, it was used for both framing and cladding.

**Figure 9: Traditional house in Dhading with three storeys plus attic, load-bearing masonry walls and timber floors and roofs, with external timber verandas**

*Source: Bill Flinn, 2017*

### 3.3.2. Nepal

Most of the communities visited in April 2017 were badly affected by the earthquake of 25 April 2015. The architecture lost in this area typically consisted of two- or three-storey load-bearing masonry constructions, built in stone and mud mortar with timber floors and traditionally tiled, pitched roofs (see Figure 9).

Different stages of progress in reconstruction were observed, but few houses were complete. A variety of materials and structural systems were used, the choice of which, according to focus groups and interviews with homeowners, depended on the accessibility of the settlement and the financial resources of the household. The prevailing structural typologies in the reconstructed building stock were load-bearing masonry (see Figure 10) and reinforced concrete (RC) frames with infill brick walls (Figure 11). Field observations identified a range of combinations of different materials in the masonry and the wall bands. No bracing in roof structures or floors was observed, and the connection between floors and roofs to walls varied widely between buildings.

**Figure 10: Load-bearing stone masonry, 1.5 storeys**

*Source: Alejandra Albuerne, 2017*

**Figure 11: Reinforced concrete frame with brick infill, one storey with reinforcement bars at all columns ready to build a second storey in the future**

*Source: Alejandra Albuerne, 2017*

The fieldwork revealed significant differences between reconstruction in rural market towns and hill communities, as a result of accessibility. In market towns, where construction materials are cheaper due to lower transport costs, widespread use of cement was observed. Many RC frame buildings with brick infill panels were being built (Figure 12), typically of two storeys finished with a flat roof. Elsewhere, many houses were built in load-bearing brick with cement mortar and cement wall bands (Figure 13). In some cases, there were RC corner posts without an actual frame structure, providing no confinement to the brickwork. These buildings typically had timber floors and roofs, the roofs being pitched and finished with CGI sheets, a cheap solution that can be beneficial under seismic loading because of its light weight, as long as it is safely nailed or bolted down.

**Figure 12: Reinforced concrete frame structure with brick infill walls**

*Source: Alejandra Albuerne, 2017. New dwelling in Salyantar Village Development Committee, under construction: reinforced concrete frame structure with brick infill walls, ready to proceed with the construction of the second-floor structure*

**Figure 13: Load-bearing brick walls with cement mortar and reinforced concrete corner posts and bands**

*Source: Alejandra Albuerne, 2017. Figure 13: New dwelling in Salyantar Village Development Committee, completed: load-bearing brick walls with cement mortar and reinforced concrete corner posts and bands, mono-pitch corrugated galvanised iron roof*

In more remote communities higher up the hills, the use of cement and brick was less common, in particular among poorer communities, where the predominant construction typology is load-bearing masonry in stone with mud mortar, with floor and roof structures comprised of timber beams and joists and timber boards (in some floors) or CGI sheeting (for most roofs and some floors). The quality of material and craftsmanship varied widely.

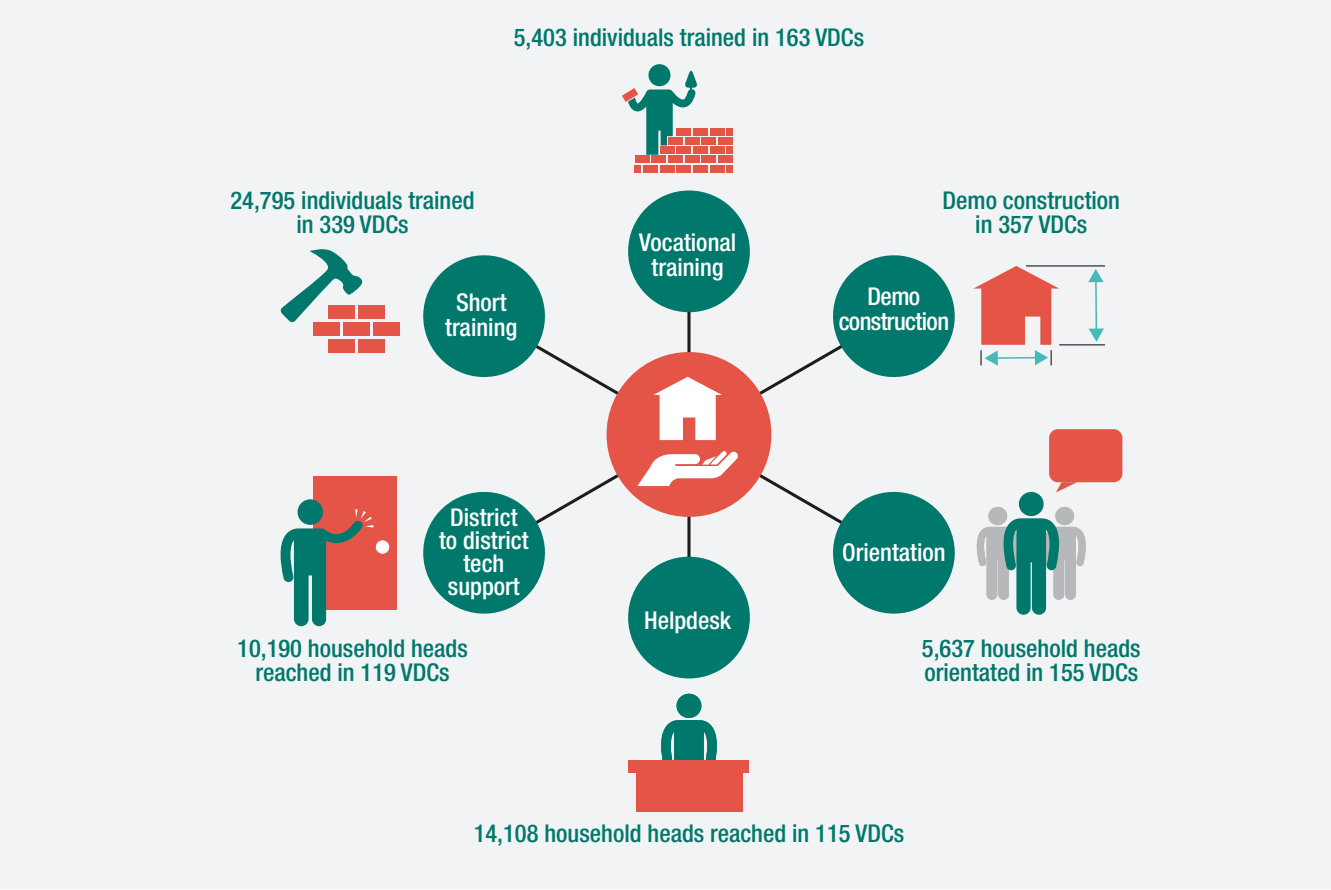
After the 2015 earthquakes, the Nepalese government enforced implementation of the Nepalese Building Code (NBC) in all earthquake-affected areas.[15] The reconstruction grant offered by the government to affected households was conditional on the new house complying with the code, making it a powerful tool for ensuring compliance. This has presented many technical and administrative challenges and has shaped the reconstruction of housing in rural areas. Previously, construction of housing in rural areas did not involve engineers or architects in design or supervision. Houses were built by local builders using the technologies known to them and typically following pre-existing simple designs. Over the past 30 years, traditional construction techniques have been increasingly replaced by RC construction. In rural areas, this was done primarily without engineering design or supervision (CBS, 2012), with RC construction skills remaining low.

> *People do not trust housing here. Although people received training, there was no supervision so they don't really know what they are doing right.* (Male interviewee, Tawal, Nepal)

Implementation of the NBC requires a high level of technical support. The NRA, in charge of managing the government's post-earthquake response, has developed technical support packages to meet this need (HRRPa, 2017). Much of this support is delivered by partner organisations (POs), typically national or international NGOs, who work in each VDC to support the implementation of the post-disaster recovery framework (NRA, 2016). The success of the rebuilding programme depends very strongly on the capacity of the PO to deliver a comprehensive technical assistance package. Although this was a large-scale programme (Figure 14), it was not available in over half of the VDCs at the time of the research. Instead, it was common for only the training of masons and the construction of a model house to be implemented. POs were provided with only this basic level of technical assistance in the parts of Dhading District visited by the project team: as a result, full government grant distribution, which is linked to code compliance, had reached very few households.

15 The NBC was published in 1994, and formally approved by the Government of Nepal in 2003. Its application to housing had subsequently been limited in practice to residential buildings in municipal areas, where the local authorities issue building permits for all constructions. VDCs which administratively ran the rural areas until the recent changes of 2017, did not issue building permits, making NBC enforcement difficult. Furthermore, with the exception of public buildings such as schools or hospitals, the NBC had only an advisory character for new buildings using traditional construction methods in VDCs. Compliance of small domestic buildings with the NBC typically means meeting the Mandatory Rules of Thumb (MRT) that exist both for RC frames with masonry infill and for load-bearing masonry structures. The MRT do not require any structural calculations in the design, but provide minimum dimensions, minimum reinforcement, joint detailing, etc. The most significant changes that code compliance brings to construction practices in rural Nepal affect masonry structures.

**Figure 14: Socio-technical assistance activities promoted by the Housing Reconstruction and Recovery Platform in Nepal, including delivery data in earthquake-affected Village Development Committees**




*Source: HRRPb Nepal, 2017*

The government also sent engineers to the affected VDCs to inspect rebuilt houses and verify their compliance with the NBC so as to release the reconstruction grant. The deployment of a large number of engineers to rural, often remote, areas posed many challenges and contributed to the delays in reconstruction. The vast majority of deployed engineers were recent graduates without much professional experience. Very few had structural engineering expertise, and of these only a fraction understood traditional masonry construction. The small teams sent out were, in many cases, insufficient to deal with the reconstruction of 1,000 houses or more in many VDCs. Moreover, the demands of the job, the low salaries and the remote locations meant that around 1,200 engineers resigned their positions within the first year (Shahi, 2016).

In Nepal, the official emphasis on structural safety (and the catalogue of associated designs that conditioned the cash grant for reconstruction) resulted in vulnerable members of society being left out of the process because they could not comply. Moreover, the government's approach did not take the diversity of building typologies into account. Its policy of only providing training and technical support for rebuilding stone, brick and RC structures excluded other traditional and vernacular building typologies, such as timber-frame and lightweight structures that are safer in an earthquake than masonry. Houses are often the location of livelihood activities: for instance, shops and teahouses may have living spaces above. In Nepal, a typical mountain house has a stable for livestock on the ground floor, living space above and food storage in the roof space. However, three-storey buildings and the wide openings of traditional shops are not covered by the rules and housing design catalogues which are guiding new building under the housing reconstruction grant conditions. Deviation from these would require additional engineering design, which is largely unattainable for the affected households. This has the potential to disrupt restoration of family livelihoods and the rural economy. Moreover, emphasis on structural resistance to earthquakes may lead to overlooking everyday household risks, such as acute respiratory infections and inadequate water and sanitation.

The delivery of key building-for-safety messages, and the enforcement associated with this, differed significantly between the two countries. In Nepal, the grant conditionality was far more explicitly and prescriptively linked to message uptake, demanding compliance with the NBC. Observations and discussions with the communities that the research team visited in the Philippines suggest

that in these cases the grants, though also conditional on BBS compliance, were issued under less stringent inspection conditions, with local community members responsible for inspecting houses. In addition, technical support and training, as well as accompaniment, helped in applying BBS messages. Some members were trained in the BBS messages and how to check if households were implementing them. Together with local carpenters, they formed roving teams that accompanied the reconstruction done by each family. Although the uptake of the BBS messages was not uniform, it was clear that the teams did have a positive influence on their implementation overall. Anecdotal evidence collected in the field, as well CARE's evaluation of its Haiyan response (Newby et al., n.d.), suggest that there was a correlation between the influence of the roving teams and the organisational cohesion of communities. Where BBS message intervention was heavily deployed in the Philippines, the community and householders were likely to be more aware of risk reduction. Many homeowners believed that their houses were 'safer' as a consequence of adopting BBS messages and INGO shelter support, although in one location this perception seemed to be born of the fact that their houses had subsequently withstood a far less severe typhoon than Haiyan, Typhoon Ruby, in 2014 (NDRRMC, 2014).

In Nepal, people felt that technical advice and support from trained engineers throughout the reconstruction period was limited. Many individuals had requested help from engineers who had not arrived, or they were still awaiting a response. Interviews with engineers based in the VDCs suggested that they felt they had little support to help respond to the vast scale of need and were poorly equipped to deal with the technical requirements of the structures they were working with, particularly when assessing structures that did not strictly follow the Nepalese code. Although local masons were trained to follow the government's reconstruction model (by trained engineers, masons and others), the impact of this training needs further investigation. Families pointed to these limitations when discussing their lack of confidence in the structural safety of the homes that were being rebuilt; and, in some cases, this had caused them to return to temporary shelters while the reconstruction of their houses was under way. Additional support and technical assistance were needed to reassure families that their structures complied with BBS and building code messages:

> *When we got the first tranche [of reconstruction grant], we were given books with the housing designs in it. It acts as a kind of manual. We started building when we got the first tranche, but I do not feel safe, I'm not sure if it meets the government regulations.* (Male focus group, Chimchok, Nepal).

Further research is needed into the different contexts and conditions that would support an increased uptake of such messages. For example, messages could be communicated in a different way, or there could be more dialogue with communities about what makes a house structurally safer in the face of different hazards. It would also be useful to raise awareness of different risks, and what to do if an early warning is issued.

# 4. Research findings and implications for further research

Shelter self-recovery and its links to safer reconstruction represent a relatively new area of interest for researchers and practitioners. The research undertaken by the ODI-CARE-UCL-BGS team was a relatively small-scale pilot project, carried out over a short period of time and using an experimental methodology. Its findings should be seen as indicative rather than definitive. Nevertheless, it provides many new insights into the characteristics and processes of self-recovery, highlighting a number of important issues for policy and practice, and opening up new lines of enquiry.

The research findings set out in this working paper are wide-ranging, touching on many different aspects of motivation, opportunity and action in self-recovery. There is still much to be learnt about self-recovery and interdisciplinary research approaches for understanding it. However, the pilot project's findings appear to be supported by recent research and guidance on recovery and post-disaster transitions more generally. This puts more emphasis on the complexity and evolutionary nature of recovery processes, innovation and adaptation, the involvement of new or different actors and role changes, the interplay of factors beyond agency interventions, interactions across different levels and at a range of scales, and the voices of disaster-affected communities (Blackman et al., 2017; Becker and Reusser, 2016; McManus et al., 2015; Few et al., 2014).

The overall picture that emerges from the research is complex. The evidence shows clearly that households have to make many different choices – about obtaining resources (for rebuilding homes and livelihoods); when, how and where to rebuild; ensuring security and safety for their families; and finding ways of coping with the psychological consequences of disaster. These choices and their timing are influenced by a wide range of external factors: environmental, institutional, financial and social. Households' choices are constrained by their circumstances, particularly the extent of their losses, poverty level, social status and influence, social and political connections, housing land and property rights, the availability of information and its relevance, the extent to which they are able to access financial and material assistance (formal and informal), the level of their scientific and technical knowledge and skills, and the many challenges of living and making a living in challenging physical environments.

The research confirms the well-established conclusion, from numerous other studies and evaluations, that livelihood recovery and diversification are vital post-crisis coping mechanisms, which disaster-affected people view as key to achieving recovery. It also shows that livelihood recovery is a long-term, ongoing process that deserves more thorough study over longer periods of time.

## 4.1. Recovery pathways

Self-recovery is a multi-faceted and highly dynamic process. The needs, priorities and opportunities of affected people shift frequently over time and according to changing circumstances (such as the arrival of monsoon rains or the availability of different forms of assistance) and as a consequence of the policies and interventions of external actors, from local organisations to international humanitarian agencies (together with the resources provided by them and conditions attached to their assistance). They are also pragmatic and creative, attuned to adaptive living: for example, traditional house designs are adapted to location and prevailing environmental conditions.

These rapidly changing needs and priorities are part of the reality facing any humanitarian response, which the needs assessment methods of agencies sometimes fail to capture. Self-recovery begins immediately after a disaster, but data gathering and analysis for formal post-disaster needs assessments (PDNA) by the international community take longer, and it may be some time before sufficient information is available to inform the design of recovery programmes. Needs assessments generally tend to be a snapshot in time, and by focusing on affected people's needs rather than their capacities, priorities and intentions, they may miss the information required to predict people's recovery trajectories. The concentration on emergency

needs (e.g. hygiene kits, tarpaulins and food), while clearly necessary in a crisis to obtain life-saving assistance, can also distract attention from strategic planning for recovery. However, proposals written in those first few weeks often set the agenda for recovery programmes. Assisting agencies need to make their programming more flexible and responsive to these shifts (Maynard and Barritt, 2015). Where initial analysis considers contexts and potential recovery trajectories, it is easier to design recovery programmes that can be flexed and altered over time.

## 4.2. Choice and agency

Households want to exercise choice and be more in control of their own recovery and reconstruction, but face many constraints in doing so, particularly their poverty, debts and limited livelihood opportunities. A challenge for assisting agencies is how to facilitate greater freedom of choice.

A choice-based approach to self-recovery assistance programming requires moving from a sector-based model providing 'confined choice' (that is, choice limited within the sector) to one that is more integrated. This would remove the barriers often put in place by the limited capacity of the agency or the conditions insisted upon by the donor: families would be able to choose between housing support, a new latrine or backing for a livelihood start-up. Supporting informed choice also implies greater investment in community mobilisation, knowledge exchange, training and supervision. This 'accompaniment' could include the training of shelter ambassadors from the community who would have the responsibility to encourage long-term compliance with messages about BBS (modelled on health-promoter programmes).

The idea of 'accompaniment' to self-recovery, rather than implementing recovery programmes, implies an overhaul of existing ways of working and changes in decision-making power. Conventional, quantifiable shelter recovery programmes based on housing delivery will need to take a broader perspective that goes beyond the physical structure of a shelter and better reflects household priorities and values, assessed through a wider range of indicators. This may be more difficult to measure and standardise, and may be less palatable to donors (Schofield and Miranda Morel, 2017).

When putting people's choice and control at the centre of support to self-recovery, shelter agencies will need to come to terms with the fact that BBS may not be a priority for everybody. Instead, they will have to focus on ensuring that people are making informed decisions equipped with the best knowledge and resources that they can obtain. A choice-based approach also implies a transference of the ownership of risk to the affected people. This shift puts a different emphasis on an aid agency's duty of care: where before there was a duty to supply high quality goods and services, now there is a need to enable informed choice through the provision of appropriate technical support and information.

Photo: Luisa Miranda Morel, 2017. 'It isn't my livelihood that changed, I stopped working to take care of my child that used to be taken care of by his siblings but I decided to put them in school so they couldn't take care of him anymore...After Lawin, I saw how hard life can get so I decided to take them to school' – Philippines

## 4.3. Building back safer

The idea of 'building back safer' – which is central to the humanitarian shelter sector's thinking, to assisted self-recovery programming, and to the research – was much debated by the project team. It was a point where the project's different disciplines clearly came together: an evaluation of safety involves a combination of environmental, hazard and engineering knowledge, understanding of socioeconomic conditions and influences, and humanitarian programme expertise.

The team identified an ambiguity about what 'safer' means: the term is open to different interpretations, both by households and disaster professionals, and it is influenced by a range of factors, including cost and time. Being more flexible about how the terms 'safe' or 'safer' are understood in reconstruction programmes implies a rethinking of standards, with both practical and ethical implications. To what extent should safety levels vary according to context? On what basis does one choose between insisting on high levels of structural safety (which because of cost will benefit relatively few people) or lower levels of safety (which in some conditions may save more lives and achieve greater reductions in economic losses)? Does BBS apply only to the structural integrity of buildings or should it include the resilience of the environment in which they are situated? How should safer building programmes (which may combine a range of technical, communications/information, livelihoods and other types of intervention) be evaluated and what criteria should be used? How does one measure the contribution of safer housing to wider socioeconomic resilience?

These questions are hard to resolve and require substantial further research from a social science perspective (i.e. what levels of safety are acceptable/wished for), a science and engineering perspective (what is the actual level of safety produced by different interventions) and by the practitioner community (how to effectively implement BBS to achieve the desired safety). Assisting agencies must also recognise that BBS may not be the main priority for many households. Rebuilding should seek to make houses more resilient to future hazard events, but this depends on the availability of finance, technical skills and support, and appropriate construction materials. Difficult operational decisions must therefore be made by households and agencies about what level of safety is desirable and achievable.

## 4.4. Contexts

Future research needs to consider a wider range of contexts, including different disaster types, magnitudes and impacts. There is a need for more comparative analysis and a more nuanced understanding of wider recovery processes and pathways, and where self-recovery fits into them. Post-disaster opportunities and constraints derive from pre-disaster conditions – people who were poorer or otherwise marginalised in society before the disaster will find it harder to recover and take advantage of assistance opportunities. The 'build back better' ideal aiming at recovery that is transformative – in the sense of improving social conditions and making social relationships more equal – seems a long way from being realised.

Most research into self-recovery appears to have been in rural areas where families rebuild in situ, or at least nearby. The locations studied in this project were also mostly rural. Urban contexts display different building typologies, infrastructure dependencies and property tenure or ownership arrangements, as well as different forms of response to crisis (e.g. moving into hosted and rented accommodation rather than rebuilding). This will be explored in the new research project that the team is about to begin. Self-recovery of migrants, landless people, squatters and populations displaced by social conflict or violence, leading to settlement in camps or migration into towns and cities, is an important issue that also requires separate investigation (Flinn et al., 2017).

The communities visited by the researchers were at different stages of recovery: in Nepal, two years since the earthquakes; in the Philippines, three years and five months after Typhoon Haiyan, and one year and six months after Typhoon Haima. Yet recovery is a very long-term process, lasting years or even decades. Longitudinal studies show affected societies making a series of adaptations over time to post-disaster conditions and ongoing changes (Davis and Alexander, 2016; Sword-Daniels et al., 2016). More research of this kind is needed.

## 4.5. Governance and power structures

Governance structures and processes exert a powerful influence on all forms of recovery. Official reconstruction policies, regulations and conditions affect the speed of recovery trajectories and progress towards safer building. In this research, these issues were most evident in the conditions attached to the award of reconstruction grants in Nepal, which required strict compliance with specific building techniques. In the Philippines, however, there appears to have been more flexibility about adoption of BBS practices.

Politics, power relationships, political and social connections and influence were less visible and therefore harder to identify, although Nepal's political instability was mentioned by interviewees as a challenge to recovery. Future recovery research needs to look beyond the technical or instrumental aspects of post-disaster governance to consider the ways in which political and social structures influence resilience by determining people's empowerment and ownership over their environment. Relatively little is known about how different governance regimes influence shelter reconstruction (Curato, forthcoming) or how social relationships and socially constructed power dynamics shape recovery processes (Choudhury and Haque, 2016).

## 4.6. Actors and agency

Recovery is often viewed from the perspective of international agencies (through their reports and programme evaluations) and increasingly from the perspective of affected people (through participatory research and national or local NGOs' surveys and evaluations). Both perspectives acknowledge the central role that national governments play in directing or influencing recovery interventions and outcomes, which is also borne out by this research, but governments' perspectives and decision-making constraints at all levels need to be examined in more depth. It is often unclear how other (especially official) stakeholders understand recovery and self-recovery. Future research into self-recovery should pay more attention to national, sub-national and local actors, as facilitators, representatives of society and a focus for capacity-building. There must also be better understanding of the supporting roles of a wider range of local actors (informal, formal, private sector, voluntary, etc.).

## 4.7. Natural environment

There is scope for more extensive research on post-disaster housing choices in dynamic physical environments. Although some disasters lead to relocation to safer places, most households have to rebuild and continue to live in the same hazard prone environments. Most of the rural communities visited during the research were rural, often isolated, and prone to several types of hazard. One of the dilemmas facing them in rebuilding was deciding which hazard to give priority to, since these require different construction techniques. In some locations, house design addressed everyday hazards, such as high temperatures or smoke from cooking stoves, rather than less frequent risks that would have a much greater impact.

Landscape-informed strategies for supporting self-recovery could be considered. Landscape approaches to DRR, climate change adaptation and increasing community resilience take 'the entire landscape in which risks originate and manifest themselves' into account, along with hydrology and the ecosystem, in an 'interdisciplinary, cross-sectoral and holistic' way (CARE Nederland and Wetlands International, 2017: 4). One way to support self-recovery would be to contribute to activities that address these landscape factors, which may be on too large a scale or require technical expertise that is beyond the capability of a community.

## 4.8. Learning and knowledge exchange

Innovation is needed in the ways in which knowledge is produced, acquired and shared within communities, and between communities and external organisations. There is strong demand from disaster-affected people for reliable information, especially relating to hazards, safe construction techniques and livelihood opportunities.

Debates about the appropriateness and effectiveness of communications methods used in safer building projects go back many years (Dudley and Haaland, 1993). The research from this project suggests that formal information dissemination activities regarding hazard risk and safer construction have mixed results in supplying the kinds of information that families need and enabling them to make informed choices. It seems that many assisting agencies still have some way to go in communicating effectively: using contextually and culturally appropriate methods, engaging in genuine dialogue with communities, and recognising the extent and value of local knowledge and adaptive capacity.

More appropriate and innovative approaches to identifying and sharing knowledge are needed, using a wider range of knowledge brokers or intermediaries. Knowledge transfer should become a more interactive process of knowledge exchange and dialogue. Here there is a role for NGOs, local partners and communities themselves to act as knowledge intermediaries and brokers of both scientific/technical and indigenous knowledge. There is also a need to evaluate existing feedback mechanisms that supply practitioners with the information they need to improve, change and – where necessary – end interventions. At local level, learning pathways and knowledge exchange are often informal, and they vary greatly from one society or even community to another. They are invisible assets, difficult to identify and understand without good local knowledge and connections – and they often elude humanitarian actors.

## 4.9. Social and cultural factors

The field research did not capture much information on changes in social relations after disaster – an important but under-researched topic (Tierney and Oliver-Smith, 2012) – nor on intra-household relations, gender issues and inclusion. There was some evidence relating to factors influencing household decision-making about recovery, but there is much more to be learnt about when and how decisions are made, and who makes them. The influence of housing, land and property rights on recovery capacities also needs further investigation, as do differences in wealth and status between families. More effort is needed to talk to families who are not assisted by international organisations.

Disaster researchers are beginning to acknowledge the significance of cultural settings and their influences on DRR, but these can be difficult to identify and analyse (Krüger et al., 2015; IFRC, 2014). There is considerable scope for further enquiry into how cultural factors affect attitudes and approaches to recovery choices; for instance, about the psychological impulse to maintain a familiar, traditional 'home' and how this might conflict with the demands of BBS. This project's research show that psychosocial recovery is an important part of households'

and communities' recovery overall. Trauma from disasters persists, though it can be partly mitigated by social support mechanisms. More work is needed to understand it and support it. Many households interviewed by the project regarded knowing how to prepare better for future events, and the confidence that gave them, as part of their recovery. Some indications of the psychosocial impacts of disasters on households' perceptions of risk and the safety of their houses were collected by the project, but more scientific study of these impacts, and their influence on reconstruction choices, would be valuable.

## 4.10. Money and markets

Several issues under this heading deserve further investigation. One is the significance of remittances from family members in other countries, which was touched upon in the Nepal study; another is the potential use of cash transfers – now widely used in humanitarian interventions – to stimulate shelter self-recovery (ODI and Center for Global Development, 2016). Economic issues (markets, commodity prices, etc.), although discussed by research participants, were not emphasised as strongly as might have been expected. More work is needed to understand the impact of a self-recovery approach on market behaviour, and consequently the structural resilience of housing repaired or rebuilt in the recovery period. Market swings tend to be exacerbated by disasters that require widespread or largescale reconstruction, as they can cause localised price hikes until supply overtakes demand (Global Shelter Cluster, 2016). This may have serious implications for the resilience of post-disaster housing, particularly regarding the availability of good-quality materials, as well as encouraging people to cut corners in reconstruction.

## 4.11. Interdisciplinary research methods

The interdisciplinary approach enabled the researchers to identify a range of factors contributing to the nature, speed and efficacy of shelter self-recovery actions by affected households and implementing agencies. The fieldwork generated reflection and discussion about interdisciplinary collaboration and the research methods that had been used. There is clearly scope to refine and develop the methodology further in the light of this experience, although this may require some rethinking of the approach and ways of working.

Other research disciplines might be incorporated: for example, psychology (to investigate psychological impacts of disasters as a component of recovery), sociology (broader patterns of societal response), economics (market disruptions and household economies), human geography (environmental understandings) and political science (politics and power relationships). A wider range of research tools could be considered, particularly to explore issues that are not apparent (e.g. local/indigenous understandings of risk and safety) or to fill some of the gaps in the research findings from the pilot project.

Field teams would gain from spending more time within a smaller number of communities to build up a more complete and detailed picture that examines self-recovery trajectories over longer periods of time, and the wide range of factors that affect them. Here, a potential tension between research and practice should be acknowledged. Humanitarian practitioners often seek quick results in order to act promptly and improve their performance. Researchers can be more measured and reflective in exploring ambiguity and contradiction in the evidence. Teams will need to reach agreement on what types of data to collect, how much data they need, and appropriate methods for analysis and reaching conclusions. Skills development and training may be required.

# 5. Conclusion: understanding (self-) recovery

The project has extended our understanding of self-recovery by identifying some of its features and the factors affecting it, but the concept of self-recovery itself needs further refinement and clarification. It is used as an umbrella term for a range of activities of various kinds, with varied levels and types of external assistance, but might be better explained as an independence–assistance continuum, which could usefully be broken down into different forms or components. The term 'self-recovery' originated in the humanitarian shelter sector and, to date, it has been strongly associated with shelter reconstruction. Yet it cannot be seen in isolation from other aspects of household and community recovery because, as this project's research shows, these are integrally linked. From the perspectives of households recovering from disaster, the reconstruction of a home in isolation from the restoration of livelihoods and emotional wellbeing does not constitute recovery or resilience. This requires the focus of the self-recovery debate to be widened beyond shelter, and to incorporate factors that may be more difficult to quantify and measure.

Finally, it may be timely to question the usefulness of the term 'recovery' itself. It is open to a variety of interpretations, depending on different knowledge, experiences and perspectives. It implies a process of improvement and return to some kind of normality that many disaster-affected people may not be able to obtain. This positive normative notion overlooks the fact that post-disaster contexts may be very different from pre-disaster conditions, creating a 'new normal' with different demands and priorities (Tierney and Oliver-Smith, 2012). It may be more realistic and constructive to think in terms of 'post-disaster transitions' encompassing a range of options and strategies for managing greatly altered environments over extended periods of time.

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# Project documents and reports

*Promoting safer building project workshop report*, London, 26–27 January 2017 (summary available at: http://promotingsaferbuilding.org/first-project-workshop).

*Promoting safer building and self-recovery in the Philippines: roundtable discussion workshop*, Manila, 17 March 2017 (summary available at: http://promotingsaferbuilding.org/self-recovery-in-the-philippines).

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203 Blackfriars Road
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Fax +44 (0) 20 7922 0399

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